Telephony.

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The Service First Idea.

Newspapers report that the Chicago and Northwestern Railway Co. has adopted as a slogan "Safety First Means Greater Safety, Greater Regularity, Greater Co-operation and Harmony, as well as Greater Efficiency," and that following its leadership, 48 railroads in the United States have instigated a "Safety First Crusade."

This slogan may be changed and adapted for use by telephone companies so as to read "Service First Means Greater Service, Greater Number of Subscribers, Greater Harmony and Co-operation, as well as Greater Efficiency." Such a slogan posted in prominent positions around an exchange and thoroughly impressed upon the minds of telephone employes will undoubtedly do much toward producing results which will be satisfactory to the public, the telephone company and the employes.

Telephone companies are rapidly awaking to the fact that "Service First" is essential for a successful organization. In Michigan, the Michigan Independent Telephone & Traffic Association is doing good work with its operators' "schools of instruction." On another page in this issue is an item that tells of the schools of instruction which will be held throughout Michigan during the month of May.

The objects of the Telephone Service Association are likewise toward the betterment of service, and its book of operating rules, which has just been issued, should be in the hands of all telephone companies which desire to join in the movement of "Service First."

An Important Series by the National President.

Elsewhere in this issue is presented the first of a series of articles by Manager Savage, president of the National Independent Telephone Association. These articles, which will deal with questions of national interest and of vital importance to the industry, particularly those relating to state and national regulatory bodies, will appear from time to time in these pages.

The first, published this week, deals with the matter of basing rates upon the physical valuation of a public utility plant. Under the operation of laws recently passed by Congress, all public utilities coming under the jurisdiction of the Interstate Commerce Commission are to be appraised and such appraisal is to be employed in determining the rates which the utility companies are to charge for service. Mr. Savage maintains that physical value alone is unfair to the utility and that other elements of no less importance enter into the question.

This contribution to the literature of the telephone business should be read closely, as should the others which are to follow. TELEPHONY hopes that their publication will inspire other practical suggestions from the field as to the best manner of coping with the problems of today, and will gladly devote space to a full discussion of these important topics.

Greatness Through Association.

An employe of the New York Central Railroad, who is apparently observant beyond his station in life, remarked the other day the peculiar effect of a big room on the average person. "They all seem to grow a foot when they come in here," he said, referring to the immense waiting room in the new Grand Terminal station. And they do!

The high ceiling, the long windows and the immensity of it all, have a peculiar psychological effect. Once inside the portals people seem instinctively to elongate, to grow, to stand more erect and to be above the common things.

There's a lesson in this. The mind that is analytical and observant is similarly affected by association with a big company. And it should be.

To be a part of a great organization is a big thing, and, by suggestion, it adds to the individual.

An organization is no bigger than the people who make it, and by a law of commerce the people are no larger than their organization. They grow up together, together they become great, together they make success or failure.

Ponder this well when you are considering your relations with the company.

The Pessimist and also Clarence

By HERBERT KAUFMAN

He turns the silver side of every cloud to find its dark lining. Beholding one maimed petal, he bewails the fading of all the rose. His to-morrow brings no hope—no rainbows follow his storms. He is a human bullfrog, constantly diving into the dark mud of existence and soiling the song of life with his chilling croak. He seeks selfish motives in every benefactor—he bites the coin of charity and blackens the pure metal of generosity with his miserable acid of doubt.

He peers into the hearts of children for guile and deceit—he tests the golden impulses of great-souled men for streaks of brass—his chief happiness is the pursuit of misery, and when his hunting is successful he divides his woes freely with all his acquaintances.

While all the rest of the world is tugging onward, he is straining backward—a clogging cog amidst the whirling wheels. He's a fussy, grouchy, disturbing member of society, himself unwilling to advance, yet unwilling to have others press onward.

His coat-of-arms is a sneering frown, surmounted with funeral plumes and emblazoned upon a field of tears. The immemorial motto of his clan is, "I told you so."

His eyes never lift to the heights of achievement. To him all that is untried is untrue—that which is undone, cannot be done—what has not been proven must be false. We all know him. He's at every desk and every elbow—so busy criticising that he keeps others from creating—so earnestly watching pennies that might roll out that he overlooks the dollars they might bring in. He swells his chest and points with pride at the expense he keeps down without a thought to the revenues he keeps away.

Don't mind him, he doesn't count. He's just a stumbling block on the up-road. What he calls caution is merely cowardice. If half the energy he applies to retarding his associates was bent upwards, its force would hurl a dozen undertakings to their goal.

Clarence Nearsite was such. Clarence is no longer Chief Penny-saver for Gettup & Goze. Clarence's resignation was quite a surprise to a number of people, including Clarence. When he and old man Gettup talked it all over, this was about the gist of the valedictory: "When I engaged you to be our safety-valve, I didn't realize what an intense disposition you have. You have not only been a satisfactory safety-valve, but too satisfactory—in about one more year, the valve would have been the only active part of our machine.

"So long as you held down expenses, you were all right; but when you got enthusiastic and started to hold down our income, too, I sorter felt that I'd prefer to smash the business by letting it go too hard than see it lost by running down. Your record in the postage stamp department is irreproachable—your showing in lead pencils and rubber bands is immaculate. The price at which you purchase our ink and scratch pads shows a marvelous knowledge of values, but when I look over the list of ten-dollar chances you let slip by, while you were avoiding ten-cent risks, something tells me that we must part.

"Somehow or other you strongly remind me of Bruno. Father bought him to keep the boys from stealing his apples. Bruno did manage to drive the boys away, but he also drove away the commission men who came to bid on the crop, and so Father had to dispense with him—he couldn't afford so much protection.

"I expect that we'll lose many a dime through the coming year running along without you, but the dollar-well is so deep and action is so important in emptying it that we'll take the risk on spoiling a little bit for the sake of keeping the buckets full."

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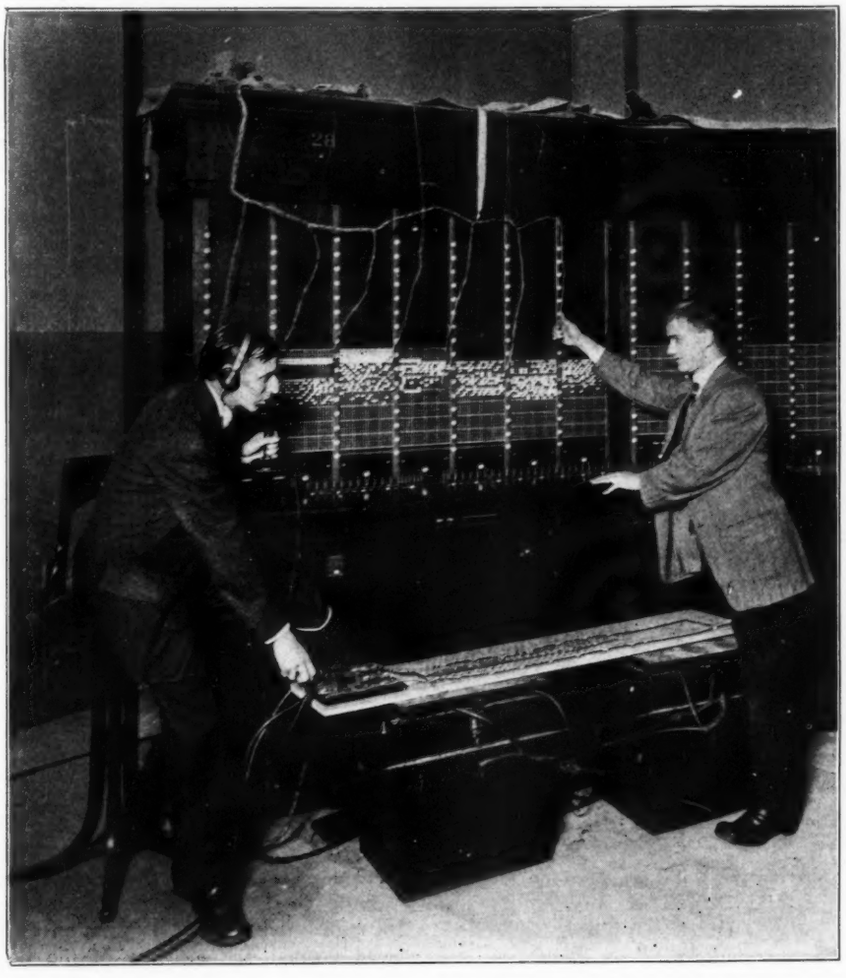
Methods of Cutting Over Common Battery Exchanges

Systems Used in Transferring Telephone Lines from Old Exchange When a New Exchange Is Placed in Service—Improvements Which Have Been Made from Time to Time—Description of Method by Which a Practically Instantaneous Cut-Over Is Possible

By Stanley R. Edwards

In all states where the population is growing, the need of telephone service also increases in like proportion. As the number of lines to be given service by one switchboard is commonly limited to 10,500, new switchboards have to be installed to take care of any increase in subscribers over this number. Usually switchboards are installed in new exchanges which are in the center of the district. Occasionally an exchange which, when built, was in the center of the district comes, by reason of growth of the city, to be on the outskirts, so that for the best economy in operation, it is well to establish a new exchange.

When a new exchange is established, the cutting over or switch from the old to the new exchange must be made without interfering with the telephone service. Not so very many years ago, the cutting into service of a new telephone exchange was considered an event of great importance, especially in telephone circles. Now, however, exchanges are placed in service with scarcely any comment or notice being taken of it. What is the reason for this? Lack of novelty? Yes, in a sense that may be the answer. It was only six or seven years ago that, in a large city of the Central West, the first of several multi-office exchanges was placed in service, the plant having been cut over to common battery operation about two years previously and one exchange being sufficient up to that time.



The Old Exchange Cut Out, Pulling Out Metal Plugs Cuts in the New Exchange.

The opening of the new exchange was an event of great importance. All the high officials of the company were present when the cut was made. The newspapers devoted considerable space to descriptions of the new office and, in general, much interest was taken in it. A little over a year later, another office was placed in service, but its opening attracted very little notice. It is true that many of the high officials of the company were interested in it, but only those of the engineering and operating departments were present when the actual transfer of lines was made. The novelty of the cut-over apparently had worn off, especially for a mere spectator.

Especially is this true in the really big cities like Chicago, where probably two exchanges each year are cut into service. In that city it is seldom that the high officials are present at a cut-over and even the heads of departments most concerned in work are now frequently absent. This latter is probably due to changes in methods of "making the cut."

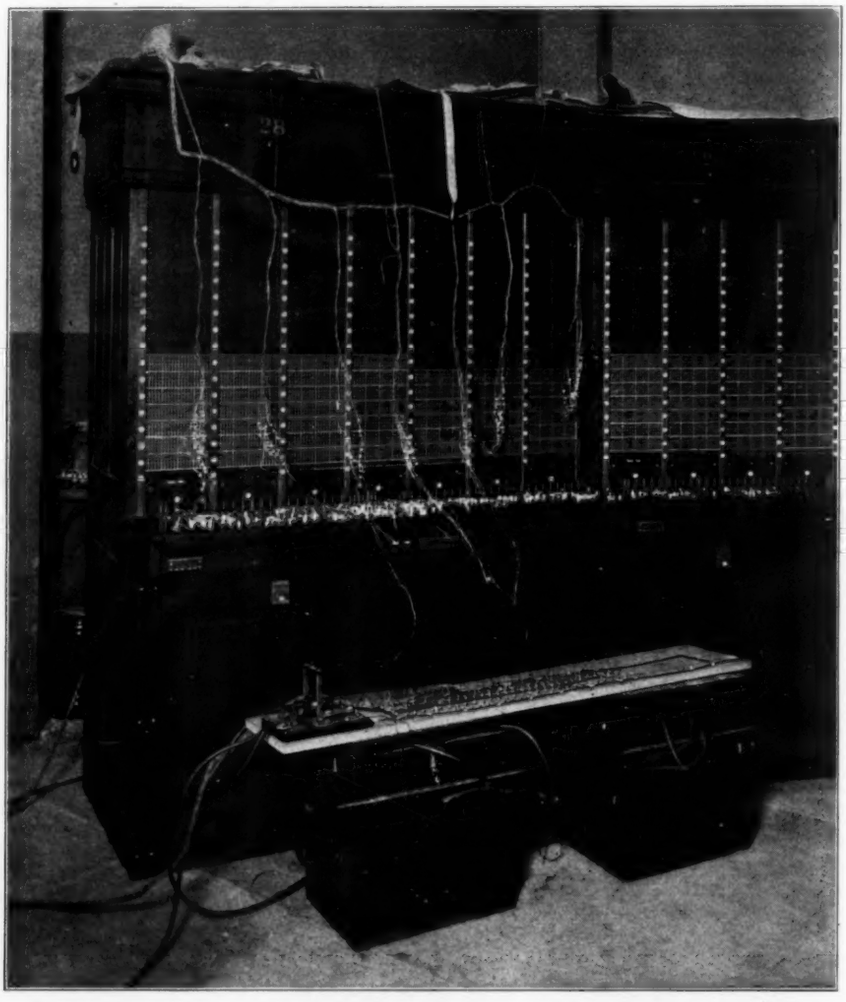
In the cuts seven or eight years ago in the city previously mentioned, lines to be transferred to the old office were connected in multiple with the new exchange. The armatures of the cut-off relays in the new office were then held up by means of thin pieces of cardboard, paper or celluloid, inserted between the contact points. At the given signal, these pieces of paper were removed and the lines at the old exchange disconnected, so that all calls would come in on the new switchboard. In making the cut-over by this method, a great many cases of trouble would arise immediately after the switch, due in many instances to particles of the paper clinging to the relay contacts and thus preventing their operation. As a result the trouble and complaint departments were kept busy for many hours. An additional source of trouble and expense was that the covers of the cut-off relays had to be removed, thus exposing the contacts and interior of covers to the dust and dirt so prevalent in new exchanges.

This method was improved upon from time to time. Cotton sleeving took the place of the paper and it was inserted between the cut-off relay armature and the magnet winding. This action, of course, opens the battery and ground contacts. After the blocking of the relays, the heat coils were placed in position on the main frame in the new office When all the necessary testing was completed, men in the old exchange would begin to remove the heat coils from the lines to be transferred. As soon as this was done, the blocking was removed from the cut-off relays, completing the cut-over.

In some cases the adjustment of the cut-off relays would not permit of a satisfactory use of this method. Hence the heat coils were not placed at the new exchange until everything was ready for the transfer from the old to the new exchange. Then a large force of men was stationed at the main frame of the new exchange and the heat coils on the main frame at the old exchange were removed in a very short time by jerking on strings which were attached to group arrangements of the coils. The men at the new exchange immediately began inserting the heat coils in the arresters, working as rapidly as possible.

For the time being no service could be obtained from either exchange, but as the cut-over is usually made about midnight, when the calls are few, the number of subscribers affected is not large. As the men work rapidly in placing the heat coils and also are naturally more or less nervous, many coils are imperfectly put in. The result is that a number of lines are out of order until the difficulty is located by the testing after the cut. To cut-over an exchange using this plan, required approximately three hours to make an ordinary transfer of about 5,000 lines. Usually many cases of trouble developed at the time the switch was made, so that all employes were kept busy clearing trouble.

A method which has been successfully used by the Chicago Telephone Co. eliminates most of this trouble and also makes the cut-over practically instantaneous. The use of this plan requires a great amount of preliminary preparation as is also the case with the other methods. All lines are tested before the cut is made, so that but few cases of trouble develop afterward. The method employed involves temporary connections from part of the office storage battery to provide sufficient current for holding up the armatures of the individual cut-off relays of subscribers. Battery and ground from the new office are thus prevented from interfering with the signaling at the old office.



After the Cut-over, Showing Metal Plugs Hanging to Temporary Battery Wiring.

The actual connection of the temporary battery supply is made through the multiple jacks. A metal plug, ordinarily used for marking dead multiple, is inserted in the multiple jacks of the lines at one switchboard section only. These metal plugs are connected to the special battery supply by wrapping bare wire around their shanks. When this connection is completed, it is possible to test through from the jacks in the new office to the subscribers' stations, checking with the switchboard in the old office, thus eliminating any possibilities of omissions and errors. When all preliminary testing is completed and everything ready for transfer, the old office is quickly disconnected by the removal of heat coils on the main frame. The new office is then almost instantaneously cut into service by jerking out the metal plugs in the jacks at the one position of the switchboard.

The illustrations show quite clearly the arrangement of the temporary wiring to the metal plugs which are placed in the jacks at one section only of the switchboard. A portable storage battery was used for the current supply at the particular cut-over pictured, but this is not necessary as connection may be made to part of the regular office battery. It can be seen that the form of wiring lends itself to the rapid withdrawal of the plugs from the jacks. A pull on each branch of the cable removes a number of the metal plugs, thus cutting the lines into service.

This method was used a few months ago in making one of the largest cut-overs ever attempted, something over 8,250 lines being transferred. One of the great advantages of this system of cutting over an exchange lies in the fact that a partial cut-over can be made if it is so desired. It is also unnecessary to remove the covers of the relays, thus keeping out dust and dirt and avoiding possibility of disturbing the adjustment. Equipment Superintendent A. P. Hyatt of the Chicago Telephone Co. devised the plan and it has proven unusually successful in the transfer of lines from one exchange to another. The illustrations showing the application of the method are reproduced through the courtesy of the Bell Telephone News.

To Adjust Toll Line Switching Rates in South Dakota.

A complaint and petition having been filed by the Worthing Electric Co. and various other Independent telephone companies doing business in various parts of South Dakota, concerning the insufficient amount received for the switching of toll line messages, the South Dakota Board of Railroad Commissioners has issued an order requiring the toll line companies complained of to file their answers to the complaint before May 25.

A hearing has been called, to be held at Gayville, S. D. on May 20, in a complaint filed by the Gayville Rural Telephone Companies Nos. 1 and 2 for connections with the Northwestern Telephone Exchange Co. for toll service.

Is Physical Plant Valuation a Fair Basis for Rates?

Are Not Initiative, Daring and Preliminary Labor of the Promoter Possessed of Value and Should They Not Be Recognized?—What the Personal Element Means—First of a Series Dealing With Vital Questions.

By Manford Savage
President of National Association

Congress has recently passed some laws requiring the physical valuation of public utilities doing an inter-state business. Similar laws are being enacted in some of the states in reference to utilities doing intra-state business. It is generally conceded that the purpose of congress and state legislatures in enacting such laws, is to arrive at a basis for fixing rates. At a later date I shall be pleased to discuss some of the particular provisions of these laws. At this time my only purpose is to call the attention of my brothers engaged in operating Independent telephone properties to the fact that such laws are now upon the statute books, and that their enforcement and the complying with the provisions thereof on the part of the government officials, is in the near future. I am firmly of the opinion that the strict interpretation of these laws and enforcing them along technical lines is of vital importance to us all.

Substantially all of the Independent telephone properties were built at a time when the legal right of an Independent to use telephone equipment was in doubt; when men with money had no faith in the business; when the right to use this means of communication was denied to the rural and urban population, and rates were excessive. Men of ability, of courage and full of initiative, stayed in the field under conditions calculated to discourage ordinary business men, with the result that the public has almost universally received telephone service at the lowest possible rates.

While, as said above, the purpose of the physical valuation by government is to find a basis for rate making, there are other and very serious matters involving a plant already built. While not going as far as did the Chicago banker, who said that watering stock is only capitalizing brains, is there not a modicum of truth in that statement? Is there not some real value in the concern, which came to it from the enterprise, commercial daring, the sweating brain and the unnumbered hours of intense labor which the "promoter," if you want to use that term, put in to make it a going concern? The originators of the physical valuation ideas claim to be, and in many cases are, progressives (in the real, not the political sense) who would change industrial conditions which are rapidly producing machines instead of men. Yet in insisting that only physical values go to make up the real value of an operating public utility, they eliminate every element of human sagacity, fidelity and labor, and destroy with one blow all reward for initiative.

In following this plan in the telephone business, the value is confined to poles of a certain size, so many pounds of wire, and a switchboard of a certain type. Is this the true basis of value? Many of us do not think so. Instances are so numerous and so well known to us all, that particular statement is unnecessary where a plant of high physical value is being operated at a loss and fails to give adequate services to the public. Another, perhaps in the same community, having a very much less physical value, is giving good service to the public and making money for its stockholders. What is the matter? It is the personal element.

This fact is beginning, dimly, to be seen by those who have studied the matter. A notable example, section 52, of the Daily Bill for regulating and controlling public utilities, now pending before the legislature of Illinois, reads as follows:

"Any public utility may itself profit from any economics, efficiencies and improvements which it may make, and may distribute by way of dividends, or in others ways dispose of the profits to which it may be entitled and the commission may make a permit or arrangements with any public utility as it may deem it useful for the purpose of *encouraging economics, efficiencies or improvements and securing to the public utility making the same*, the profit thereof."

This is a frank statement of the views of a number of able men who spent two years as a committee in examining into the practical working of utility laws in the principal states where such laws are in force. Could there be a more important work for Independent telephone men to do than to secure the general recognition of the principles embodied in the section of the law quoted?

Service Association Issues New Operating Rules.

The Telephone Service Association, Chicago, has just published the revised rules and regulation governing the handling of long distance circuit and traffic of Independent telephone companies. They make a book of the loose-leaf type of some 75 pages so arranged that additional sheets may be inserted from time to time. A durable flexible cloth cover is provided so that the book may be conveniently rolled for carrying in the pocket.

Companies which use this book of operating instructions will certainly be able to improve their service if the operators study the regulations. In getting up the book, clearness and conciseness were the aims, and an operator should have no difficulty in mastering the subject matter. The use of toll tickets is carefully explained by use of reproductions of actual tickets, properly filled out, showing the various reports and notations regarding the calls. Frank L. Eldridge, manager of the Telephone Service Association, McCormick Building, Chicago, will be glad to give full information regarding the association and the use of the book.

Telephone Ordinance for Keokuk, Iowa.

At a recent mass meeting of citizens at Keokuk, Iowa, the draft of a proposed ordinance was approved establishing rates for telephone service of $3 a month for business houses and not to exceed $1.50 per month for residences with a uniform rate of $1 per month for a two-party business or residence line.

New Exchange at Beatrice, Nebraska.

The new telephone equipment at Beatrice, Neb., is fast being placed into condition for use in the new headquarters built by the Lincoln Telephone & Telegraph Co. The offices and department rooms are located on the first floor and the switchboard and rest room for employes on the second floor of the new building. It is expected to have the new system in operation before July 1.

Dayton's Leading Department Store Was in the Center of the Flood—Part of Pole Supported by Wires.

Re-Establishing Telephone Communication in Dayton

The Damage to the Telephone System Wrought by the Flood in That City—How Messages Were Sent Out Over the Telephone—The Work of Rehabilitation and How it was Done—The Estimated Cost

In a recent publication Elbert Hubbard stated that the original "Seven Wonders of the World" had been replaced in modern civilization by Seven Up-to-Date Wonders of the World, among which he specified, at the top of the list, the cash register, the aeroplane and the telephone. Dayton, Ohio, the birthplace of the two former, has gained renown by reason of these products of human ingenuity. This, however, is the story of how Dayton, in time of flood, found itself helped out of a very bad situation by reason of the telephone.

The city of Dayton covers an area of about 16½ square miles on which lives a population of approximately 130,000 citizens, possessing the privilege of 20,000 Bell and Independent telephones. Of this area ten square miles was flooded and some idea of what is meant by this may be gained from the accompanying view of high water at the northwest corner of Second and Main streets, in front of the finest retail store of the city. It was on Tuesday, March 25, in the early morning, that the waters, rising higher and higher, broke over the levees, flooding the city. In the path of destruction, the main leads of heavy poles, wires and cables of the telephone systems were all a part of the toll of property damage for which the waters showed no discrimination, but which to the telephone companies and the public whom they serve, were of incalculable value. Yet they left one little link in the great chain of electrical communication, to be utilized to the best advantage.

This little thread of wire wove its way through a city flooded by water and fired in its principal business sections as well as in its low-lying residential parts. In spite of the effect of the turgid, seething water, flowing at a furious rate and at a depth of 12 feet, this one wire found its way to the town of Xenia and then in succession followed the path to Springfield, Phoneton, Piqua, Urbana, Marysville and then terminated at the headquarters of the Bell system in Ohio, at Columbus. It was by virtue of this one remaining means of communication, after all others had failed, that the chief executive of the state in his office, first received correct and detailed information as to the deplorable situation in all its seriousness. The situation was outlined to the governor and he was impressed with the necessity for quick action.

Governor Cox was kept well informed of the conditions in Dayton during the anxious days of the flood, by John Bell, an employe of the Bell company. Mr. Bell for 56 hours stayed at a telephone, sending out messages whenever the wires would work. He had no opportunity to sleep and but little food in that time. His services during that period ending with

Some of the Local and Toll Leads in Dayton After the Flood Subsided.

the time he sent the welcome news that the waters were receding, will not be soon forgotten.

Then the efforts of the telephone company's representatives turned toward the restoration of telephonic communication which it was realized would be a boon to the thousands suffering from anxiety, awaiting to inform those near and dear to them in the outside world that they were safe and sound. The necessity for establishing communicative facilities between business men to enable them to take the first steps toward the restoration of many manufacturing and industrial establishments which had suffered complete devastation was also realized.

Utilizing to the fullest extent the one outlet for communication which, had it not remained, the results would be hard to estimate, the company was able to get in touch with the owners of powerful pumping apparatus and succeeded in getting the machinery into the city limits in record time. On Friday morning, as the waters had subsided, this apparatus was transported to the company's headquarters and put into immediate use, pumping being necessary in order that the water above the storage batteries located in the basement might be released. This powerful apparatus was first in operation and obtained

John Bell, the Dayton Flood Hero.

greater results in less time than many others seen in action.

Coincident with the arrival of the pumping machinery, a large Wood gas engine was received from Springfield. This was set up in the rear of the building and connection made to a generator to charge the batteries. Thus the company was enabled to quickly put into operation its local and toll switchboards and in this way give service to some 1,200 subscribers who were not located in the flooded area.

But this was only the preliminary step in the process of reestablishing telephonic communication, the value of which, as has often been demonstrated, is inestimable. With all possible haste, the company dispatched to the stricken city gangs of men and carloads of material which reached there in record time. An effective organization was promptly made and all efforts expended in an endeavor to overcome the unfortunate disarrangement of the company's service which had resulted in the public being practically cut off from all with whom they would have liked to have communicated. With almost superhuman energy and complete willingness to sacrifice comfort and convenience in the loyal devotion to duty, the men set to work with a will. Although laboring in some cases under most adverse circumstances, they thought little of that but had their minds set on a goal which all realized must be attained at any cost—complete and efficient restoration.

Gangs of cable men in mudholes with water waist deep and with pumps working over their heads to keep the water down, labored night and day endeavoring to adjust the indescribable condition in which they found their work. Owing to the excessive pressure caused by the great depth of the waters, the damage wrought to many cables necessitated in numbers of cases absolutely new ones.

Other gangs of men were assigned the disagreeable task of adjusting the almost hopeless condition in which many cables in buildings were found. After the waters had receded a deposit of heavy, thick, clay-like mud was found in the streets and cellars. This was about six or eight inches deep. Whatever had been stored in the basements was shifted here and there by the waters and had become covered by this thick, gruesome deposit. Hence the chaotic condition with which the men found themselves obliged to contend can be imagined. The terminals, house cables, wires and instruments so dirty and wet, were rendered in such a condition as to necessitate removal and substitution by entirely new equipment.

In the flooded district, in which were situated many of the company's subscribers, a condition was met with which seemed almost impossible to contend against. Not only were many nouses washed completely from their foundations, but a great many more were found shifted, turned backwards and in many cases up-side down. Of course, this caused many broken poles, cables and drop wires. A large number of men and wagons was assigned to this work in which, in nearly every case, instruments had to be replaced as well as wiring and protection.

It is estimated that it will cost the Bell system nearly a half million dollars in Ohio to restore its service and that nearly one-half of that will be spent in Dayton alone. It is declared that no efforts have been or will be spared to bring back to an even higher grade of efficiency, the operation of the system in that community.

Personnel of Indiana Commission.

Governor Ralston of Indiana has named three members of the Public Service Commission of Indiana, which began its duties on May 1. Thomas Duncan, Princeton, and James L. Clark, Danville, have been appointed to serve four years, and Charles J. Murphy, Brookston, has been appointed to serve for two years. John F. McClure, Anderson, and Frank E. Payne, Jeffersonville, the two members of the Railroad Commission of Indiana whose terms have not expired, are continued in office under the utility commission act. Burt New will be the general counsel of the commission and will serve as legal adviser of both the governor and the commission. Mr. Duncan will be the chairman of the commission.

Missouri Commissioners Appointed.

Governor Major of Missouri has announced the appointment of John M. Atkinson, former assistant attorney general; John Kennish, former Supreme Court judge; H. B. Shaw, dean of the engineering department of the Missouri State University, and Frank A. Wightman, of the Missouri Railroad Commission as members of the Public Service Commission created by the recent Assembly. Mr. Wightman's term will expire on April 15, 1915. Mr. Shaw and Mr. Kennish are to serve four years. Mr. Atkinson is to serve for six years. This leaves one member still to be appointed. Mr. Atkinson has been elected chairman of the commission.

A Government Telephone Factory.

The British post office department is building a factory at Birmingham, England, where about 1,000 men will be employed making telephones and equipment for the country's telephone system, now a government monopoly.

Progress

Being a Director—Dodging Debts—Being a Minority Stockholder, Etc.

By J. C. Kelsey

Psst! I won't tell anyone! Are you a director in more than one company? Do any of the companies have a capitalization to exceed $10,000,000?

If you are, beware! Have a care! The law will get you if you don't watch out! Fines and imprisonment are sure to follow. Fines, possibly—and imprisonment, never!

Do you know of many distinguished men who have actually gone to jail?

Any corporation capitalized under $10,000,000 can go on as before. But above that, there must be reform.

Little man, up to your neck with competitive or trust problems, cheer up! You can sleep nights now.

These big, over $10,000,000 fellows will not be able to hurt you any more—much. Because the law will say that the big fellow can not be up to his old tricks of cut-throat pricing for more than 60 days. At the end of that time, the trust must be good, and restore prices.

What a great relief: Those of us who are and have been threatened with extinction, if we can hang on 60 days and dodge the sheriff, we are safe.

If that brutal trust bully should happen to extend his below cost price for 61 days, the law will slap him on the wrist and put him out of business.

You can not tell me that the world is not growing better; —that the sun will not shine and the birds will not sing. For a beneficent government is going to protect us,—the little men who are struggling somewhere below ten million dollars!

The past weeks have been a rude time for the predatory corporations. One by one they get the bumps.

The Supreme Court has added another spike to the trust coffin. It works out this way, and it's simply discouraging in its effect, too. This decision will discourage thrift upon the part of magnates—no doubt they are ashamed of the ingratitude of the creditor.

A long time ago, the Northern Pacific Railroad owed a corporation $125,000. It was a just debt, too.

So they organized the Northern Pacific Railway, and took over the railroad. But as usual, they forgot all about the debts of the railroad. They had no use at all for the debts. All they wanted was assets.

Did you ever try to ascertain the difference between a railroad and railway? Next time you go on an extended trip, try to figure out whether you are on a "road" or a "way."

Anyway, the railroad became a railway, and the debts ot the road became a memory. But the Couer d'Alene corporation could not forget. They saw the same rails, trains, engines, and the same officials in the brass railed cars.

You have to hand it to some people. They will fight for their rights. So the Couer d'Alene people went into the courts, and went the tedious way to the Supreme Court.

When is a debt not a debt? That is the question! That is what they wanted to know. After much perlexity, the Supreme Court voted 5 to 4 that a railroad owing money could not jump the debt when reorganized as a railway.

Now, honest, this is a cruel decision! What will be the use of organizing corporations when they can not refuse to pay a bill or break an onerous contract?

It is an outrage upon the feelings of the legal profession. It is a direct blow at the practice of reorganizing corporations to skin some one.

Oh, where are our liberties going? What will happen to the legal profession if it loses the big reorganization fees it gets for skinning people?

You and I may find comfort in the world yet. The worm is beginning to turn! That worm is the justly despised minority stockholder. Honestly, there is every indication that minority stockholders are growing or cultivating a backbone. Would you believe it? They are actually beginning to fight.

The battle is on between the Bell company and the minority stockholders of the Central Union Telephone Co.

I have often expressed myself in this column regarding the spineless cactus known as a Bell minority stockholder. Today he is practically extinct. He was overawed by his respectable connections and went to his extinction with pride, licking the hand which held the axe, or the chloroform sponge.

But they did not get away with the "rough stuff" entirely —there must be an accounting in Central Union.

You will be further surprised that the Chicago worm has turned. In Chicago you will find more suckers and easy-marks than in the brush of the backwoods.

A bunch of Chicago Street Railway minority interests are actually fighting for their rights.

You know the Panama Canal is the eighth wonder of the world. When you were a boy there were but seven. Today, there are nine wonders.

Truly, a bunch of Chicago men, fighting for their minority rights is a sight which should astonish the world. Carnegie will simply run out of medals.

They have sat patiently by, all these years, and murmured not! You have heard one thousand times, as you butted into a conversation, that children should be seen and not heard. This applies directly to finance. In financial circles, the minority fellow wears the bib and sits in the high chair.

He should be seen and not be heard. He should rely solely on the honor of holding shares in a great, proud corporation. That should be glory enough!

Why should he ask questions when dividends are missing? Purely impudence.

Anyway, the officials in charge of the Chicago railways are greatly peeved at the childish insistence of the minority stockholders. I am sure we will soon see a pamphlet published, telling investors what the etiquette of a minority holder should be.

Do you know, these protesting minors (they should be called "minors" on account of their strength, are actually asking what is being done with the property. They want to know about salaries. They want to know why a notoriously jobless son-in-law is getting $12,000 a year and what his job is.

I think this is the most heartless thing the "minors" have done—to have gone and disturbed the peace of that son-in-law! That is the rankest breach of etiquette. A case of the rankest ingratitude!

Here is a case of a magnate doing all he can to take care of his family, and let the hoi polloi read about them in the society columns! Don't you know that Chicago magnates' daughters will not marry unless the man has from $5,000 to $10,000 salary? It is hardly enough at that to start housekeeping on.

Father can usually get daughter anything she wants. Why not a ready-made husband? So father is clever. He creates a new job with other people's money, and these minority fellows are contemptible enough to question his high and lofty motives. Fie! Fie!

That book of etiquette for minority stockholders should not be delayed.

The reader will learn that large corporations are not run for the benefit of stockholders entirely; that they are for the purpose of providing pleasant and profitable jobs for relatives and friends who control them.

You know how monarchy surrounds itself with pomp and ceremony so as to impress the mob. Likewise must minority stockholders be impressed.

It is very annoying for magnates to be asked questions by the despised small fry. But they may yet have to get a little bit more accustomed to it.

Another surprising thing has happened.

A bunch of banks and other investors bought "Rumeley" preferred around $100 a share, and a little later had the shock of seeing it drop about 80 points. The stock prospectus was a dandy, and a large New York banking house over-exerted itself in promises.

Why, now the suckers are demanding their money back! And queerer still are likely to get their money back. You know it has always been a case of "let the buyer beware!" and lick his sores and bruises in silence.

There is even a disposition on the part of security dealers to adopt a policy of giving you money back when their promises fail. The law does not compel restitution. But it should do so. Most any house will settle privately rather than have a law-suit and the resulting ugly publicity.

No manufacturing company could exist today, if it had been guilty of one-tenth of the lying and misrepresentation indulged in by security-selling concerns. People are finding this out, and are going by on the other side of the street. That is why you may get your money back some day!

Have you sold all your steel stock or telephone stock because you fear the new tariff? One of the wealthy men in the East has done so. The little man was afraid of the new tariff law—which yet does not exist—and sold out his 40,000 shares.

I often wonder, and I know you do too, how so many cold-footed men have managed to annex so much property.

Some men actually turn pale at the thought of business courage. They never had any. Yet they have the goods and you know why! Special privilege, accident of birth tariff, rebate, or something not normal. The time will yet come when we will answer to the law of the survival of the fittest.

That is why I would like to see the tariff entirely removed—to put every man and concern on his own legs. You and I know full well that labor prices have gone up purely and simply because labor organizations have forced them up.

Don't let any idea of philanthropy permeate your brain—that beneficiaries of an extremely protective tariff divide up! Say, it is all fiction about dividing up. You only get what you demand.

The Supreme Court decision which forbids a railroad or any other concern to dodge a just debt by manipulation or reorganization is a smash at privilege. The law which limits a trust in its ruthless warfare of price-cutting is an attempted smash at privilege.

The very fact that something is being done for the little men, does not signify that he is a weakling. The little man's demands are being heard for the first time. Simply because he never made a demand before. It is done to give him freedom from worry and let his life have some pleasure. All he asks is freedom from unequal odds!

Under the protective idea for 50 years, colossal fortunes have grown.

We have raised up a class of timid, yet selfish individuals, who sell steel stock because a deferred tariff reduction may take place. The same crowd always buys substitutes in war time. A country which brags of its enterprise and skill, and ability to build a bridge in the far Soudan 606 days after receipt of order, does not seem a fitting abiding-place for a man who sees things in the dark.

Every time I see New York, I return home with an increased contempt for the so-called financial giantism of New York. It is nothing but gaudy tinsel. And, as I watch the curb brokers jabber, that hold up fingers, I can't help but feel that the bone and sinew of this country will yet easily take charge of things, and put this great unproductive army back on the productive clock.

Stockbrokers and bond dealers find business poor, but that is no sign that legitimate business is bad. It means that American people are awakening from their gullibility.

The country has been dictated to too long by the non-producers. It seems that when business is good and wheels turning briskly, that there is no money left for the financial traders. So we hear the rumble of panic and threats for curtailment. But no one listens.

Wild-cat brokers have had their day. And legitimate dealers seems to be on the way, too. In other words, finance has claimed too big a toll and the come-back is on.

You can see that the day of the small man is on. He is beginning to fight for his rights.

Right in Chicago one lone man named Hogarth has nearly depopulated Chicago. He has given the snap away in the Elevated Railway deal. You remember this concern discovered air-castle value. This discovery is wonderful too.

Since he has filed a suit for accounting, not one of the defendants can be found. The New York trains are handy things. You can make a nice, clean and quick get-away. Others have gone out of town, some are down at the farm, but anyway the cat is out of the bag.

When promoters get to fighting among themselves, honest people have a chance.

What a pity that the inside should ever be shown! No wonder we hear complaints about lack of investors. They are getting too wise.

A few more protests from creditors and minority stockholders, a willingness to fight, and they will soon show the people that the strength of the alleged big fellows is an awful bluff. We, in the Independent telephone business, certainly called the biggest bluff in industrial history.

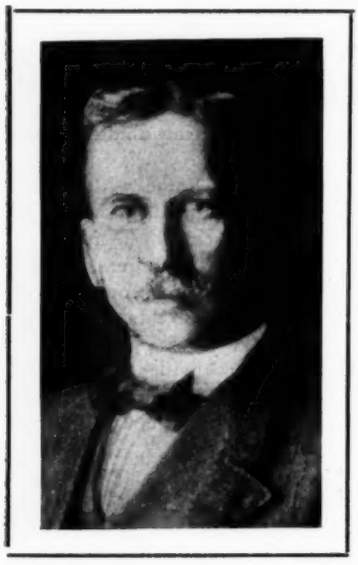
MORAL:—Watch the Worm.

Meeting of Social Club of St. Paul Company.

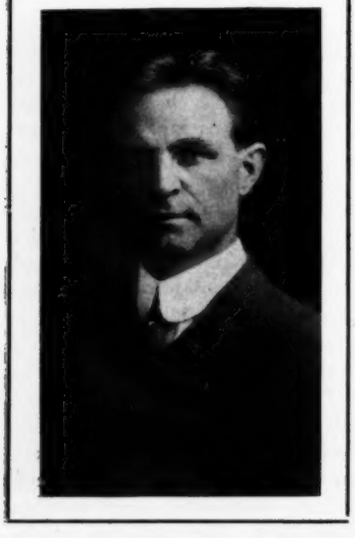
The Tri-State Telephone Technical and Social Club, an organization of the representatives of the Tri-State Telephone & Telegraph Co., recently held an interesting semi-monthly meeting at Fargo Hall, Merriam Park. The gathering was a social one and a musical program was presented, the numbers being alternated with talks by W. S. Williams, A. C. Cragg, J. A. Beckstrom and Henry Brock. The executive committee had planned to discontinue the meetings for the summer, but this did not meet with the general approval of the members present.

A Quartet of Men Prominent in the Telephone Field

GEORGE BOYCE, superintendent of telegraph and signal of the Chicago, St. Paul, Minneapolis & Omaha Railway Co., and superintendent of the Western Union Telegraph Co., at St. Paul, Minn., was born near Park Hill, Ontario, Canada, in March, 1868. He was educated in the public signal department, signal and high schools of that city, and came to the United States, in 1886. As superintendent of signals of the Chicago, St Paul, Minneapolis & Omaha Railway Co., Mr Boyce has charge of the telephone service of that company. Mr. Boyce began railway service as telegrapher of the Chicago, St. Paul, Minneapolis & Omaha Railway and has since continued with this company, holding successively the positions of wire chief, secretary in the telegraph signal department, acting chief operator, chief clerk in the telegraph engineer and superintendent of telegraph and signals of the company. Like many other railroads throughout the country the Chicago, St. Paul, Minneapolis & Omaha Railway Co. adopted the telephone for train dispatching, and jurisdiction over the system has fallen to Mr. Boyce.



W. E. LAWTON, secretary, treasurer and manager of the Viroqua Telephone Co., Viroqua, Wisconsin, was born at La Fargo, Wis., in January, 1875. He was born and raised on a farm, and attended a common school, helping with the farm work during vacations. He left the farm at the age of 22 and entered the telephone field. He started in the employ of the Viroqua Telephone Co., in 1897 and was appointed manager of that company in 1899. In the same year he assisted in building an Independent exchange in Asheville, N. C., and aided in organizing and building an exchange at Phillips, Wis., in 1900. He had charge of the exchange at St. Peter, Minn., during the year 1901, and since that time has given attention to the management of the Viroqua exchange which has grown from 46 telephones in 1897 to 360 at the present time in the city. Mr. Lawton has assisted and encouraged the building of numerous mutual farm telephone lines in the vicinity of Viroqua. He is a member of various lodges including the F. & A. M., R. A. M. and three branches of the I. O. O. F. and M. W. W.



WILLIAM P. COOKE, chairman Port Arthur Electric Railway, Light, Telephone & Power Commission, Port Arthur, Ontario, Canada, was born in Markham, Ont., in January, 1849, and settled in Port Arthur in May, 1873. He has followed the trade of watchmaker all his life and since 1877, has had charge of the Port Arthur meteorological station as signal service observer and reporter for the Dominion government. Has been an alderman for over 20 years; also justice of the peace and commissioner. and led in establishing the several utilities now owned and operated by the city. Port Arthur was the starting point in Canada of the Bell system and Mr. Cooke became agent, receiving instruments of the initial series in May, 1877. He engaged in the first conversation by telephone between Port Arthur and Fort William in June 1877. In 1902 he was appointed on a committee of two to recommend means of establishing a better service at lower rates and through the efforts of this committee, the installation of an up to date visual system was secured. Mr. Cooke is a member of numerous societies and clubs.

ELSWORTH B. OVERSHINER, now engaged in general commercial business in Chicago, was born at Elwood, Ind., in June, 1867. He is a graduate of the University of Kentucky. After a number of years experience with the Pennsylvania Railway, he entered the telephone field in 1895 and built in that year the plant of the Elwood Telephone Co., at Marion, Ind. In 1897 he built the system of the Logansport Mutual Telephone Co., at Logansport, Ind., and also the plant of the Winona Telephone Co., at Winona, Ind. He built the system of the Marion Telephone Co. in 1899. In 1901 Mr. Overshiner purchased the Continental Telephone Mfg. Co. and changed its name to the Swedish-American Telephone Co. He remained president and owner of this company until 1912. He built the first Independent telephone manufacturing plant in Canada in 1908 and in 1910 promoted and organized the American Wagon Co. Mr Overshiner has been active in Independent telephone association work for many years. He is a member of the Order of Railway Conductors, and of the Chicago Press Club.

Proceedings Before Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision of Telephone Companies, Decisions of Courts in Matters Affecting Public Relations of Utilities, and Actions of City Councils Bearing Upon Franchises, Rates and Service

Another Case Before Interstate Commerce Commission.

Once more the Interstate Commerce Commission has been asked to take cognizance of interstate telephone traffic. D. E. Stephan, of Highland Park, Bethesda, Maryland, complains that the Chesapeake and Potomac Telephone Co. (Bell) is discriminating in its rates.

The complainant charges that on April 12, 1913, the telephone company established boundary lines in Maryland embracing certain territory north of the District of Columbia and adopted an arrangement by which telephone subscribers within this territory, if living within a radius of a mile from Chevy Chase Circle, Washington, receive their telephone service at the same initial rates and under the same conditions as telephone service charges within the District of Columbia; and also by which subscribers beyond the mile radius, but still within the defined territory have service at the same rates plus a minimum charge for mileage only.

It was then charged that the boundary line adopted is irregular and excludes subscribers living in territory that is located in the same general direction, nearer to the District of Columbia, and more thickly settled than some of the territory included. This situation is declared to amount to a discrimination against the complainant and the territory in which he lives and he asks the commission for an investigation and hearing and that the defendants be required to extend the limits of the boundary line to include his property and such other property as the commission thinks should be included.

Maryland Court Upholds Commissions Powers.

The Court of Appeals at Baltimore, Md., has handed down an opinion upholding the constitutionality of the Public Service Commission act and sustaining the action of the commission in regulating flat rates for telephone service in Baltimore. The opinion was written by Judge Henry Stockbridge and is a complete affirmation of the decision of the Circuit Court.

The appeal was taken by the firm of Gregg & Waters against the Public Service Commission and others. In the lower court, a demurrer filed by the defendants was sustained. The Court of Appeals points out that the most serious of the attacks was that directed against the constitutionality of the Public Service Commission law. The court, however, rules that the order of the commission fixing the rates was purely a legislative action, and not a judicial or administrative one, nor a combination of any two of them, and consequently free of any objection on constitutional grounds.

Chicago Council Committee Adopts Contract Ordinance.

The council committee on gas, oil and electric light of the Chicago city council has completed its work of drawing up an ordinance to govern telephone rates in Chicago. The proposed measure is in the form of a "contract ordinance" which, after adoption by the city council, must be approved by the Chicago Telephone Co. within 30 days, in order to become effective. A mandatory ordinance would probably be tied up for several years in the courts. It is estimated that the reduced rates would produce an aggregate reduction in the company's revenue of nearly $500,000 the first year on the basis of the present number of subscribers.

According to Prof. Bemis, the expert for the committee, the ordinance provides for rate reductions for approximately 107,000 of the 228,000 city subscribers of the company. This does not refer to the number of telephones, the company having a considerably larger number. Prof. Bemis estimated the average price paid for the transmission of each message to be about three cents. It is held the ordinance provides for a reduction in rates for each class of service paying more than the average cost, with one exception that pay stations will continue to pay 5 cents a call. The two largest classes of subscribers who will receive no reduction in rates are the private branch exchange switchboard subscribers and those having the commuted trunk lines.

The rates as adopted are as follows for business service:

For a single party line, including 960 outgoing messages, $48 a year; next 240 messages, 5 cents each; next 1,200 messages, 3 cents each; next 1,200 messages, 2½ cents each; all messages in excess of 3,600, 2 cents each. For single party line including 1,200 outgoing messages, $60 a year; next 1,200 messages, 3 cents each; next 1,200, 2½ cents each; beyond that, 2 cents each. There is also provided a special business line service including 500 messages a month for a monthly rate of $10.42.

For residence service the following rates will apply: For single party line, including 800 outgoing conversations, $40 a year; next 400 messages, 4 cents each; next 1,200 messages, 3 cents each; next 1,200 messages, 2½ cents each; messages in excess of 3,600, 2 cents each.

It also was voted that $2 should be the charge for reinstating a telephone. The right of the telephone company to discontinued service at the end of five minutes' conversation was left to the decision of the proposed complaint bureau which is provided for in the ordinance. Under the ordinance this bureau is to be maintained by funds to be contributed by the company at the rate of ½ of one mill on every dollar of gross receipts.

On behalf of the telephone company, President B. E. Sunny proposed that the expense of this bureau, which Prof. Bemis estimated would average $8,000 a year during the five-year period, be provided for by adding a quarter of a cent to the third 1,200 messages on the single party measured service, making this rate 2¾ cents instead of 2½ cents as fixed by the committee in revising the present 3-cent rate. President Sunny said that if this were done he would pledge himself to do all in his power to have the ordinance accepted by the board of directors of his company; otherwise he would simply place the matter before them for action without recommendation. The committee rejected this proposal.

New Bill in Illinois for City Home Rule Commissions.

A new Chicago city administration public utilities bill has been introduced in the Illinois senate by Senator Glackin as a substitute for the measure previously offered by him. The new bill is amended in line with suggestions made by Mayor Harrison, of Chicago, following the action of the city council in opposing the features of the old bill, which turned authority to regulate Chicago public utilities over to a city commission.

The substitute bill provides that the city council in all cities of more than 20,000 may create a commission of three members which shall have powers of investigation and

inspection. The commission shall report recommendations to the city council, which shall have final authority in the fixing of rates and in providing regulations.

Under the substitute bill a state commission appointed by the governor is given authority over all interurban utilities and over local utilities in cities of less than 20,000 population. There are about twenty cities which under the bill would be given home rule. The new Glackin bill also provides that any city of more than 20,000 which does not desire to create a commission may establish a bureau for investigating service complaints.

The state commission is to have authority over all stocks and bonds issued by utility companies except those of corporations operating only in the city of Chicago. The Glackin bill, together with the Dunne bill and the Dailey bill, were scheduled to come up for consideration at a joint hearing of the senate and house public utilities committees this week.

Harmony Established in New York Telephone Controversy.

In a hearing before Governor Sultzer of New York, recently, a mutual agreement was reached between representatives of the Public Service Commission of New York, Second District, and Assemblyman Larrimer, whereby the Duhamel-Larrimer bill providing a uniform telephone rate of 5 cents in and between all the five boroughs of New York city will be withdrawn by its originators.

Governor Sulzer severely criticized the Public Service Commission on the ground that they did not earn their money and for not being present in a body before this conference called by the governor.

The second district commission was represented only by its counsel and secretary at the beginning of the hearing although Chairman Stevens appeared later. The governor said he had wanted to talk to the commissioners face to face as to the performance of their duties. He thought that if the commission did its duty it would not be necessary for the legislature and the governor to spend their time on legislation of this nature. He said he had come very near putting in his annual message a recommendation that the two commissions of New York be consolidated into one body of five members instead of two bodies of five members each, and that their salaries be reduced from $15,000 to $10,000.

After hearing counsel for the commission as to work which had been done by the commission, Senator Duhamel in behalf of the bill and John G. Milburn and President Bethell of the New York Telephone Co., against the measure, Governor Sulzer said he thought the bill should be recalled because of defects in its form and he thought that he ought to veto every rate making bill that came before him and put the matter up to the Public Service Commission.

Ledyard P. Hale, counsel for the commission stated that the commission was about ready to announce its decision in regard to certain rate complaints emanating from telephone users in Bay Ridge and Bath Beach, the districts represented by the two lawmakers. It was the failure of the commission to act promptly on those complaints that caused the introduction and passage of the Larrimer bill.

"If I could prevail on your company to obey the decisions of the commission without going into court over it. I think we could settle this without much trouble," said the governor to Mr. Bethell.

"We have never appealed from any decision of the commission yet," said the telephone company's president, "and I pledge my word that we won't in this case if the decision is against us. I will go further. If the commission should decide in our favor, I will meet a committee of the people in those districts that are complaining and seek to reach an adjustment that will satisfy them."

"Now, you have no right to ask more than that," commented the governor to Mr. Larrimer. "If I were you I would withdraw the bill."

"I am satisfied," the assemblyman answered. "On that pledge from the president of the company, I will withdraw it."

"And now we are all happy," added the governor.

Suit For 15 Years' Taxes on 80 Poles.

The City of Springfield, Ill., has brought suit against the Kinloch Long Distance Telephone Company for $800, alleging that the pole tax on eighty poles has not been paid since 1898.

Auburn Business Men Favor Home Regulation.

The directors of the Auburn Business Men's Association, of Auburn, N. Y., recently decided to oppose a bill pending in the legislature aiming to fix the rates and character of service of telephone companies in the state. The contention of the directors was that the Public Service Commission should do the work. The board went on record as favoring home rule for cities.

Would Investigate New York Telephone Companies.

Among the last bills introduced into the New York legislature this year is one by Senator Foley for a joint committee of the senate and assembly to investigate the operation of telephone and telegraph companies in the state and especially in New York City, and to secure schedules of their rates. The committee is to be made up of two senators and three assemblymen and is to report at the next session of the legislature. The bill was referred to the senate finance committee.

Legal Opinion on Switching Charges in South Dakota.

Assistant Attorney General P. W. Dougherty, of South Dakota, has rendered an opinion to the Board of Railroad Commissioners of South Dakota in which he holds that it is contrary to the statutes of the state for telephone companies to accept in payment for telephone service anything except money and that it is not permissible for them to exchange transportation of messages in payment of telephone service rendered to each other or to the patrons of any of them.

The decision arises out of an investigation of the telephone situation in Turner county and of the charges for switching messages as between various lines including the Hurley Telephone Co., Viborg & Center Point Telephone Co., the Steninger Telephone Co., Tri-County Farmers Telephone Co., Wakonda Telephone Co., Centerville Telephone Co., and Citizens Telephone Co. As between some of the companies there has existed for some time an agreement by which the patrons on one line are permitted to talk free of charge to patrons on another line, and vice versa, while as to other lines a charge is exacted for the use of the foreign line.

After reviewing the case at length and finding it illegal for telephone companies to exchange transportation in payment of service rendered to each other, the assistant attorney general says: "It may be that this rule will appear at first to work a hardship in the particular case under consideration, but when it is understood that the telephone companies themselves may agree as to the fee which shall be paid for the switching of messages between lines, and that such fee may be placed at any sum, either 1 cent, 5 cents, 10 cents, 15 cents or any amount not exceeding 25 cents, it will be seen that the hardship is imaginary only."

Commission Defers Action in Case at Mitchell, S. D.

The Board of Railroad Commissioners of South Dakota has notified Mayor Hitchcock, of Mitchell, S. D., that the

commission has deferred all action on the question of telephone rates in the city of Mitchell for a period of 120 days, from May 11, which is the date the franchise of the Dakota Telephone company expires.

The company asked the commission to indorse a new rate which is 50 cents higher than the present one and intended to continue the service without a franchise. The commission refused to do this until it has thoroughly investigated both sides of the matter.

For the purpose of the investigation the company was ordered to file with the board an inventory of the actual value of the plant as well as the amount of business done in 1910, 1911 and 1912. This the company has done. The commission further states in its ruling that it will not be prejudiced in its ruling in any way by the litigation now pending in the telephone controversy before the federal court at Sioux Falls.

In the question of the temporary injunction granted to the telephone company by the federal court at Sioux Falls, the city is granted the right to interfere and remove lines which are for the purpose of local business only. The court will not allow the city, however, to interfere with lines used for interstate conversation. The question has arisen whether or not the city can interfere with a telephone, which is in a private residence and which has long distance connections. The city has asked that the hearing of the case be delayed until the rights of the litigants in the matter be established.

General Telephone Investigation in South Dakota.

The South Dakota Board of Railroad Commissioners will hold hearings at Mitchell, S. D., on June 17 and at Rapid City, S. D., on June 20, for the purpose of investigating telephone practices throughout the state. Notices of hearing are to be sent to all of the telephone companies doing business in the state requiring attendance by at least one representative from each company. At these hearings the commission will take up the following matters: Alleged discrimination in the matter of charges made for telephone service to stockholders and persons who are not stockholders; alleged extra charges exacted for delivering toll messages on local exchanges and rural telephone tines; alleged discrimination in switching charges and connection fees and terminal charges; alleged discrimination in furnishing of free telephone instruments and telephone service in connection therewith. Other matters that will be discussed will be filing of all schedules of rates, all franchises and copies of all contracts or agreements with municipalities and telephone companies as required by law; the making and filing of annual reports of telephone companies and contents thereof; the necessity of procuring plats and maps of each telephone system in the state for the information and assistance of the board and telephone companies; the proper method to be adopted in handling the depreciation account and the amounts to be charged for depreciation; and the feasibility and advisability of naming and establishing a rental rate allowing for a discount if the rental is paid on or before a certain date, and the amount to be allowed for such discount.

With the Oklahoma Commission.

The Oklahoma corporation commission has dismissed the case of George A. Davenport et al., of Soper, Okla., against the Pioneer Telephone & Telegraph Co., charging that the defendant company would not make physical connections with the Choctaw Telephone Co. At a hearing of the case it was pointed out by the Pioneer company that connections were made by it through another company—the Citizens' Telephone Co., of Soper, and the commission held that, inasmuch as the Citizens' company was not made a party to the suit, it could take no action.

Commissioner A. P. Watson recently conducted a hearing at Apache, Okla., to determine whether or not the proposed increase in telephone rates in that town is justifiable. The Apache Telephone Co. announced its intention of raising rates in Apache and the citizens made complaint to the commissioner, protesting against such raise. Commissioner Watson took testimony on both sides but has not announced his findings.

Complaint has been made to the commission by the Beaver Telephone Co., charging the Fort Supply Telephone and Telegraph Co. with resorting to unfair means in attempting to drive out the complainant from operating an exchange at the town of Forgan, Okla. The complainant alleges that the defendant installed a telephone exchange in Forgan shortly after the Brewer company commenced the operation of its system; that the defendant is giving service free of charge and that unless the commission prevents such unfair competition, the complainant will be forced out of business.

Right of Eminent Domain in Oklahoma.

Both houses of the Oklahoma legislature have adopted a joint resolution submitting a proposed constitutional amendment requiring railroads, telephone and telegraph company and other transportation or transmission companies to domesticate in Oklahoma and submit to the general supervision and restrictions of the corporation commission before they shall be entitled to the right of eminent domain.

The Independent System at Jeffersonville, Ind.

The city council of Jeffersonville, Ind., has passed an ordinance granting a 25-year franchise to a new independent company to be known as the Home Telephone Co., and which will install and operate a telephone system in Jeffersonville in competition with the Cumberland Telephone & Telegraph Co. By the terms of the ordinance the Home subscribers are to have free service to all parts of Clark county, and to New Albany. Until 2,000 telephones are installed, businesss single lines will cost $2.75 a month and residence single lines $1.50. After the 2,000 mark has been reached, and until it goes to 2,500 the rates increase 25 cents a month. The business single line rate will be $3.25 and the residence single line will be $2 a month after 2,500 telephones are in operation.

Indiana Commission Adopts Wisconsin System of Accounts.

At its first meeting on May 1 the Indiana Public Utility Commission voted to adopt the Wisconsin system of accounts for all public service corporations, except where the Interstate Commerce Commission has provided a uniform system of accounts. This means that all telephone companies having an annual gross income exceeding $50,000 will use the Interstate Commerce Commission's schedule of accounts and those having an annual gross income of $50,000 or less will be governed by the Wisconsin schedule.

Suit in Equity by Melrose, Pa., Subscribers.

A bill in equity has been filed in the common pleas court at Philadelphia by John B. Stetson, Jr., of Melrose, asking an injunction to restrain the Bell Telephone Company from enforcing a recent notice to Melrose subscribers requiring them to install additional telephones limited to Melrose calls, at a cost of $36 a year, on penalty of having telephone service in that suburb disconnected unless they complied. The bill sets forth that for the past five years the residents of Melrose have been supplied with unlimited service to Philadelphia for a rate of $60 per year with an additional sum for mileage, the mileage amounting to $24 a year.

Queries on Theory and Practice

Buzzer Test Set for Cable Testing.

"Referring to the query in issue of February 1, "Buzzer Test Set for Cable Testing," will you kindly advise if the buzzer test set described can be used to locate short or grounded pairs? How should it be operated on cable wires on a common return system?"

The test set to which you refer was designed to produce a tone of regulatable intensity for use in picking up pairs in a working cable in a magneto exchange, if need be on working pairs or wires. It is not usually strong enough for the so-called "wireless" cable testing for short-circuited or grounded wires. We advise you to use the regular wireless test set for this purpose, as it is equipped with a powerful induction coil, which gives sufficient current for that kind of work.

In picking up a wire on a common return system, attach L_2 of the buzzer tone generator (see issue Feb. 1) to the common return and L_1 to the line to be identified. At the other end of the cable or any desired point, attach a head receiver to the common return and with the free wire of the receiver touch all the lines. You will know the right wire by the strong tone.

Some Miscellaneous Questions.

"Will you please answer the following questions?

A. How is the Bell company's No. 25A repeating coil wound and what is the gage of the windings?

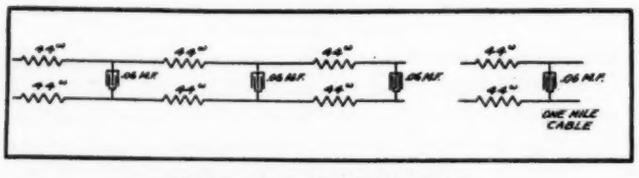
B. The Kellogg company's No. 4A coil?

C. What is the transmission equivalent of the No. 4A coil in standard cable (88 ohms loop resistance and .054 microfarad capacity per mile)?

D. How is an artificial cable made?"

A. The No. 25A repeating coil has four windings of No. 27 wire with 1,000 turns per winding. The resistance is 21 ohms per winding.

B. The No. 4A Kellogg coil has four windings. The first winding is of No. 36 B. & S. copper wire, single silk insulation; has 1,357 turns and a resistance of 72 ohms. The second winding is of No. 36 B. & S. copper wire, single silk insulation, 90 ohms; has 1,357 turns. The third winding is of No. 36 B. & S. copper wire, single silk insulation, 100 ohms.



Circuit of an Artificial Cable.

Has 1,357 turns. The fourth winding is of No. 36 B. & S. copper wire, single silk insulation, 120 ohms; has 1,357 turns.

C. Information is not available.

D. The artificial cable is made up of resistance and capacity arranged as shown in the diagram. A mile of standard cable is considered equivalent to two resistances of 44 ohms each placed in each side of the circuit with a condenser of .06 mf capacity bridged across the circuit.

Condensers in Series with Ringers of Magneto Sets.

"What advantage, if any, is gained by cutting in condensers in series with bells to line or ground, as the case may be, on magneto sets, say on a farmer line having 15 or 16 telephones on it? Would this help the transmission any by taking off the resistance of the bell coils and is there any advantage gained by placing condensers in ring off drops circuit, in the same respect as above?"

There is no advantage as far as we know in using condensers as you have described. In fact, a condenser tends to reduce the impedance of a bell coil, though so little that one would not notice it. Since the bells are bridged across the line, they are leaks and should be as high in impedance as possible, so as to reduce the loss of conversation current. This reasoning will apply to the bridged clearing out drop.

Desk Sets in a Meat Market.

"Please advise why a desk set should not be placed in a meat market as recommended in a recent installment of Practical Telephony. I presume it is on account of the presence of so much grease."

A desk set when installed in a meat market is almost invariably placed near the meat. The butcher handles the set with his damp and greasy hands. As a result it soon becomes quite filthy and corroded and the cord becomes saturated and trouble results. The caution not to use the desk set in this location is brought about by several years of observation of trouble cards, as it was noted that desk sets so located gave a great deal of trouble.

Connecting Repeating Coils to Cut-in Key.

"Please give me advice on how to cut in repeating coils when used with double keys. On the front cord the key can be used for talking and ringing, and on the back cord for ringing only."

The principles of the repeating coil cut-in key are shown in Fig. 1-*A*. The two plunger springs of the key are shown

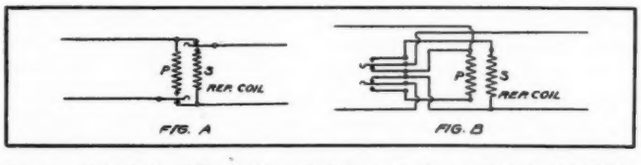


Fig. 1. Principle of Repeating Coil Cut-in Key and Actual Wiring.

in their normal positions. When operated, each swings over, cutting off the direct line and closing the circuit of one half of the repeating coil. The actual wiring is given in Fig. 1-*B*.

If you can spare one of the keys of your cord circuit, you can arrange it as in Fig. 1 to cut the coil in circuit whenever needed. If you use the ringing key on the answering end of the cord circuit as a repeating coil key, you will have to bend its springs so that it will lock in the operated position.

If you can not spare the answering ringing key, you will have to wire the coil permanently into the circuit. One very good way is shown in Fig. 2. Be sure to get it between the two ringing keys so that ringing will not be interfered with. The clearing out drop should be connected

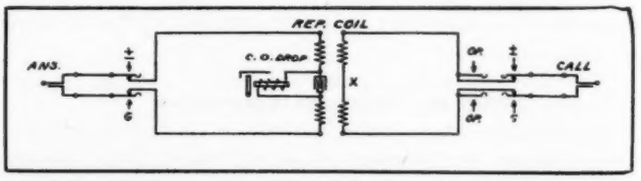


Fig. 2. Repeating Coil Permanently Wired into Cord Circuit.

in series with the coil at the center, and shunted by a condenser. If you require double supervision, insert another clearing out drop at the point marked *X*.

Wire and Cable Used in Telephone Installation Work

A Supplementary Article to Series Dealing With Specifications and Tests on Telephone and Telegraph Wires—Discusses the Insulation and Tests of Distributing or Drop Wire, Interior Wire, Pothead Wire and Submarine Cables

By Hugh Wreaks, Secretary Wire Inspection Bureau

Of the important types of telephone wire which have not yet been touched upon in detail in this series of articles there remain the following:

Twisted pair distributing wire; inside wire; bridle and pothead wire; and submarine cables. Of course, the first two are used in considerable volume. The remaining two are used in less quantity but generally for work demanding extra good quality material.

The general details as to the size and make-up of twisted pair distributing wire have been well agreed upon for some time. They usually call for:

WIRE. Copper wire of .064 diameter.

TINNING. Wire to be completely coated with tin.

INSULATION. The insulation to be 3/64 inch in thickness and of a medium grade rubber compound, made up according to specifications which have been changed from time to time.

BRAID. Insulation to be covered by a saturated braid of not less than .02 of an inch in thickness.

LAY. Wires to be twisted together in regular twists, the length of which shall not be less than 4 inches nor more than 6 inches. One wire of each pair shall have a raised thread, or other distinctive marker, its entire length.

It is the common practice of large purchasers to pay particular attention to the tinning and insulation, and in a less measure to the braid. The latter serves quite as important a function here as in weatherproof wire. In many cases it is more important as the tendency of the rubber insulation to dry out, especially where used in hot dry places, leaves frequently at the end of a lap of years only the braid serving to hold the insulation together. Or in the absence or deterioration of braid it leaves a wire exposed to moisture, grounds, crosses, or it becomes subjected to other troubles. The importance of tinning on copper wire is pretty well recognized by the Bell telephone company. This is evidenced by the testing department of the Western Electric Co. which in its tests on tinning, tests mostly all of the former company's wire, and by the fact that the Western Electric Co. devotes an entire specification to the details of this test.

Its method of testing consists in the generation of pure hydrogen sulphide gas, (H^2S) and the passing of the gas for four hours over samples of the tinned wire under test. Any weakness of the tinned coating shows up in the shape of black spots.

The United States government specifications, which are more generally followed in practice, call for alternate immersions of the samples under test in solutions of hydrochloric acid of a specific gravity of 1.088 and sodium sulphide of specific gravity of 1.142. The latter solution should contain an excess of sulphur and should have sufficient strength to thoroughly blacken a piece of clean, untinned, copper wire in five seconds. The specifications also call for a bending test of the untinned wire sample around a mandril, and a single dip in the sulphide solution, which will indicate any cracking or scaling of the tinning. The government tests also show poor tinning by the formation of black spots of copper sulphide at points where the tin is imperfect.

THE TINNING OF COPPER WIRE.

A brief review of the reasons for tinning and what good tinning means follows: Tinning is put on wire in order to preserve the copper, presumably against any action from free sulphur or oxydizing agents in the rubber compounds. It is also used to protect the copper from the corrosive action of the air, in case of damage to the braid and the insulation. The tinning of copper is not as simple an operation as might be supposed as the tin must be put on before the wire is insulated. It must therefore form a flexible coating and one not likely to be damaged in handling before the wire is insulated or during the insulating process. Obviously, too thick a coating of tin would be likely to chip off in handling.

The tinning tests just described are imperical in their nature, and are what might be called factor of safety tests, being made under severer conditions than are generally met with in practice. At the same time, there are enough samples of corroded coppr in insulated wire to show clearly the service that good tinning performs.

The insulation on twisted pair outside distributing wire is a much more complex problem. To one who has studied the specifications of the large telephone companies during the last several years, this fact has been very apparent. The early specifications called for megohms and dielectric strength; later ones for these and various physical tests; and the latest specifications have further extended the physical tests in that they cover a guarantee of certain characteristics for at least one year.

INSULATION OF OUTSIDE DISTRIBUTING WIRE.

From its functions of service, the outside distributing wire is most important being subject to extreme service conditions. The breaking down, or weakening of the insulation resistance, not only affects the service seriously, but in some cases, through crosses with light and power wires, may cause serious trouble, resulting in possible damage suits to operating companies. This wire is used in considerable volume and, with moving of telephone services, is subject to frequent changes or abandonment. But in the writer's opinion, its cost is so relatively trifling, compared with labor cost on installations, that a first class twisted pair wire is worth specifying and obtaining. Probably the best specifications recently issued covering medium grade insulation, and which are quite adaptable to all outside distributing twisted pair wire are those of the Western Electric Co. under date of August 5, 1912, issued for copper-steel, twisted pair, outside distributing wire, which are quoted at some length with comments on various details.

The essential tests called for are: the wrapping test; penetration tests; dielectric tests; insulation resistance tests; and the filing of samples by means of which wrapping and penetration tests will be made one year after date of manufacture. These tests are defined as follows:

WRAPPING TEST. The insulated wire shall be flexible and with the braid removed shall be capable of being twisted three times about itself; left for at least 16 hours, but not more than 24 hours; and then untwisted and twisted again about itself in the inverse direction without the insulation showing signs of rupture.

PENETRATION TEST. A piece of the insulated wire, from which the braid has been removed without injury to the insulation, shall be placed upon a rigid flat steel surface and subjected to pressure from a tool consisting of a bright steel wire

.040 of an inch in diameter, held taut between the tines of a metal fork. The steel wire shall be applied in a plane approximately perpendicular to the conductor of the insulated wire. While pressure is being applied, the tool shall be connected in series with a 110-volt source of potential, a 110-volt, 16 candle power lamp, and the conductor of the wire under test. The pressure applied to the wire by the tool shall be maintained between 4.9 pounds and 5.1 pounds throughout the period of test. The test shall begin when the required pressure is first applied to the wire and shall end five minutes thereafter. The tool shall not sink through the insulation to an amount sufficient to complete the electric circuit during the test.

One Year Tests. Samples of suitable length shall be taken at each inspection and held for one year thereafter subject to examination under the requirements for the "wrapping test" and the "penetration test" as hereinbefore set forth.

Electrical Requirements. The voltage and insulation tests shall be made on each conductor of the completed pair, when the coils are submerged in water and after they have been submerged without injury for at least 12 hours immediately preceding the tests.

Voltage Tests. One thousand volts shall be maintained between each conductor and the surrounding water for a period of five seconds without showing any current leakage or rupture of insulation. The sources of potential shall be a generator or transformer capable of delivering at least five kilowatts at normal load. Each conductor shall subsequently have the insulation resistance as specified.

Insulation Resistance. The tests for insulation resistance shall be made with an electromotive force of not less than 100 volts, and after an electrification for one minute, each conductor shall show an insulation resistance of not less than 100 megohms per mile at 60 degrees Fahr.

Objects of Tests.

These five tests if properly made are quite certain to insure a good compound. The characteristics of a good compound are high insulating qualities, a long life, both physical and electrical, and sufficient strength to stand without damage such handling as the wire will receive when being installed. Also, anyone who may examine wires of several years standing will observe either an extreme dryness, brittleness, or lack of resistance or deadness on much of the insulation. This indicates a physical quality much below the desired standard, and argues an electrical condition with an equally low factor of safety, especially in presence of considerable moisture or dampness.

Taking up these tests in their order: the wrapping test indicates that the compound has not been overcured and contains that degree of flexibility which will allow proper handling in service. Conversely, the penetration tests indicate that the compound has not been undercured and is sufficiently firm so that the copper under strain will not pull into the insulation, and by diminishing the thickness of the wall on one side, decrease its dielectric strength and insulation resistance. Again, these two tests taken together with the ageing test of one year and made on samples one year old, indicate further a degree of quality in the compound in that the rate of physical change or drying out has been only a small amount. Much of value can be told regarding medium grade compounds which have no appreciable stretch when new and pass the tests in question one year after the date of manufacture. Without the dielectric tests, however, these physical characteristics would not serve. But as stated before, the five tests taken together and carefully made insure a compound adequate for the service that this wire is called upon to meet in telephone work.

Such a compound covered with a good substantial braid, made of good quality cotton; closely woven with braid not laid on at too great an angle; and saturated with a high quality wax which thoroughly penetrates the cotton fibre to the exclusion of all but a small percentage of moisture; and in which the braid has not been burnt, owing to wax being put on at too high a temperature or too long an immersion, is bound to give good satisfaction, and to give this satisfaction at a cost which is not too excessive. for the wire.

In order to get the best service out of this class of wire, each user should be able to judge readily what makes and grades of wire give best satisfaction. For this purpose the wire should all be bought with a marker distinctive to its make, as well as to indicate one particular wire in each pair.

The distinctive marker consists of one or more colored threads woven into the braid or between the insulation and the braid, each manufacturer using such a marker distinctive to his wire. With these threads properly colored, such markers will remain distinctive practically as long as the life of the wire.

Other Insulated Wire.

Regarding inside distributing wire, there is little to be said as this material is strained neither by excessive current, voltage or weather conditions. There are practically no tests on this, and the principal features are a good tinning of the copper and a good substantial braid that is well sealed to the insulation and will not unravel. Where insulation is considered important for inside wire, the same tests and comments would apply as called for in outside, twisted pair, distributing wire.

Bridle wires call for a cable made up of individual wires, similar to wires of outside distributing, twisted pair, type except with possibly a little higher grade compound and with an overall covering of tape and circular loom braid with jute filling, if necessary, to make the core cylindrical.

Pothead wires are twisted pairs of tinned copper wire, insulated but not braided. The insulation here has an exacting service and should be of high quality. A stretch to about four times its length, with limits for recovery, and tensile strength are generally called for, as well as the dielectric and insulation resistance tests. The dielectric test is about 500 volts and the insulation resistance about 500 megohms per mile at 60 degrees Fahr.

Owing to the importance of this kind of wire, it is frequently bought from selected companies whose reputation materially augments the value of the specifications and the tests called for. The price of the material compared to the labor of installing is quite relatively small.

In closing this series of articles, a few brief notes on submarine cables will be given. In a measure these are very special, depending upon water conditions, depth at which cable is laid, and length and size of cable.

Submarine Cable.

The general theory of the submarine cable is a high grade, rubber covered wire, usually 30 per cent. or thereabouts, wrapped with jute and covered with a substantial lead sheath. Another layer of jute is placed around the lead sheath and this then is covered with a layer of double galvanized, iron armor wire.

The 30 per cent. or a high grade rubber covering would constitute an article in itself with the refinements specified today covering stretch recovery, tensile strength, specific gravity, chemical tests, limitations of fillers and waxes to be used and dielectric and insulation resistance tests. But this would more properly come under the proceedings of the Railway Signal Engineers, Army Signal Corps, or United States Navy Engineers than here, as all of these engineers use considerable quantities of such high grade insulated wires.

The quality and proper saturation of jute are important; also that the lead covering has absolutely no flaws or pin holes, while the integrity of the armor is probably most essential of all. The armor wire should be amply strong, but elastic rather than springy or brittle. It must undergo severe strains, and in fact it is the strength of the cable. On the other hand, if

it is too springy, it is very hard to handle and may kink badly in unreeling, especially if in long lengths.

On the galvanizing depends the life of the armor wire, and therefore of the entire cable, and naturally this should be of the best. A preceding article in this series on galvanized wire covered the point quite thoroughly.

In closing this series of articles, the writer realizes that many points might likely have been presented to better advantage, and also that there is bound to be some divergence from many of the viewpoints expressed. The matter submitted has been based largely upon observation, experience, and experiments covering several years, and it is hoped that some of the ideas expressed may prove of value to the telephone profession.

Practical Telephony for the Practical Exchange Manager

A Series of Articles Relating to the Construction, Maintenance and Operation of a Moderate Size Telephone Exchange, Which Began in the Issue of September 21, Expressed in Everyday Terms, Easily Understood—Principles Easily Applied

By H. R. Van Deventer

The receiver is the next piece of apparatus to be considered. Standard receivers of the permanent magnet type are used on both common and local battery telephones and there is no difference in modern types. Formerly 60 ohms' resistance was commonly employed for the winding where the receiver was used on common battery sets and 70 to 125 ohms for local battern instruments. The resistance can be varied within wide limits without seriously affecting the efficiency.

Receiver inspectors should begin with the cord. If at a common battery station, connect the cord across the line binding posts so that battery will pass through the receiver, making sure the receiver is "poled" or so connected that the pull on the diaphragm is increased instead of diminished. This can be ascertained by placing the diaphragm edgewise against the pole pieces. If not "poled," the diaphragm will drop off or nearly drop off when the circuit is closed. If "poled," the diaphragm will be strongly attracted towards the magnet.

With current flowing through the cord, pull it out straight and pull at the cord tips so as to locate any broken strands in the cord. The presence of the battery current enables such troubles to be easily located. At local battery stations, the cord may be connected at the battery in the instrument.

The efficiency of a receiver is lowered by allowing rust to accumulate on the diaphragm. If on the outside, the motion of the diaphragm is often impeded. If on the inside, the rust not only hinders the motion of the diaphragm, but gives the receiver a most peculiar rattling tone by lodging between the ends of the pole pieces and the diaphragm.

Diaphragms are so cheap that they should be renewed when trouble occurs. Some receivers have tin and some ferrotype diaphragms. Either type gives good results with the receiver with which it is used. But a receiver using a tin diaphragm should not be equipped with a ferrotype and vice versa, because the separation between the diaphragm and pole pieces if correctly designed for the one will be unsuitable for the other.

In replacing a diaphragm there are certain points to be observed. First, the pole pieces and cavity must be thoroughly cleaned of rust or foreign matter. The ends of the pole pieces should be simply brushed off, if lacquered. Do not scrape off the lacquer, as that will mean future rusting. If not lacquered, and rust is actually adherent, scrape it off and lacquer the poles with some thin lacquer. Transparent lacquer, such as is used for mixing "gold paint," is a good kind for the purpose.

Next wipe off the edge or rim of the receiver cup and place a rude or other straight edge across the cup arranged to pass over the poles. Observe the air gap and see that the poles are in proper position. The air gap varies with different makes of receivers. By measuring a good receiver of a certain make, a standard can be obtained.

The new diaphragm should now be carefully inspected. If it has a "wire edge" where punched out, the edge should

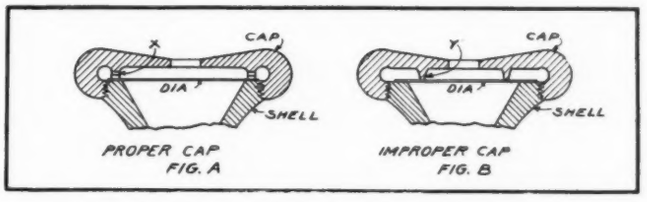


Fig. 40. The Fitting of Receiver Caps on Shells.

be carefully removed by filing around the periphery, using great care not to bend the diaphragm. If a ferrotype, be careful not to remove any of the lacquer from either side.

The diaphragm should not be placed on the receiver. If ferrotype, place the black or finished side out. Locate it centrally so that it sets evenly on the flange of the cup all around. The cap should now be securely screwed on. In some receivers a paper ring is placed between the diaphragm and the cap to act as a cushion. In such cases a new ring should be used.

Because a cap will go on a receiver shell is no reason to think it is the proper cap for the receiver. The cap not only closes the end of the receiver and acts as an earpiece, but it also clamps the diaphragm into proper position in front of the pole pieces. In every cap will be seen a ring *X*, Fig. 40*A*, which must be of proper diameter to clamp the diaphragm on the flat flange or edge of the shell.

In Fig. 40*B* is shown a cap that fits the outside threads all right but the ring *Y* is of too small diameter. Consequently it does not clamp the diaphragm down into the cup and against the pole pieces. Avoid the use of diaphragms that are too large to go into the cap and which lie flat therein. Such diaphragms are liable to buckle when the cap is screwed on tight.

When cap is screwed down and the diaphragm is properly seated, if tapped lightly with the fingers, the latter should give a clear sound, showing that it is not loose, buckled or in contact with the pole pieces.

To see that the tie cord in each end of the receiver cord is properly fastened so as to remove all strain from the terminals, is most important. If the tie cord is missing or broken, a new one can be made from a piece of sewing tape.

Many cases of "can't hear" are remedied by replacing a broken shell and screwing the cap up tight.

Where a metal cup receiver has been dropped, the edge

of the cup is often dented. If it is not in too bad shape, the dent may be filled out. This must be done before a new diaphragm is put in place.

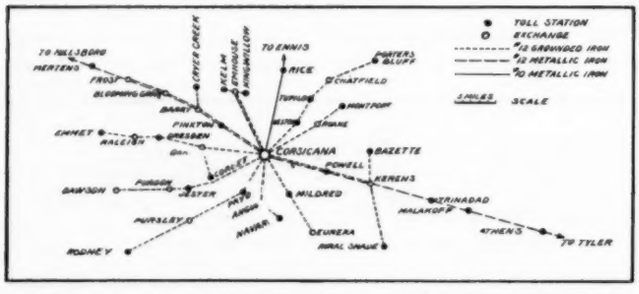
Modern composition shells are really superior to the hard rubber variety as they do not discolor with age, nor are they as brittle or expensive. The early composition shells were not satisfactory, as they often changed their shape or came apart at the joints, defects which do not occur with the modern shells.

The next part to be considered is the ringer.

(To be continued.)

Good Work of the Independents of Navarro County, Texas.

The thirteen Independent telephone companies of Navarro county, Texas, recently held their annual meting in the offices of the Corsicana Telephone Co., Corsicana, Texas, and after comparing notes found that since April, 1912, there had been a total aggregate gain in subscribers of 25 per cent. The companies represented were those at Chatfield, Roane, Eureka, Kerens, Angus, Purdon, Pursely, Dawson, Drane, Raleigh,



The Corsicana Telephone Company's Toll Line Connections.

Emhouse, Corsicana, and the Vest Telephone Co., which operates exchanges at Barry, Frost and Mertess. Each company had from one to five representatives present at the meeting, which lasted all day. Reports were read by each company and it was found that 721 stations had been added during the year, increasing the number from 2,100 to 2,821.

During the past year a number of new rural lines have been built into the various exchanges. The Corsicana switchboard has also been completely rebuilt and new circuits provided, with the result that when Corsicana subscribers desire county connections, the operator who answers the call puts them in immediate connection with the exchange desired, instead of passing the call to a rural or toll operator.

The accompanying map showing the toll line connections of the Corsicana Telephone Co. gives an idea of the extent of the Independent system in Navarro county. A large development is expected during the coming year, as practically every company has a number of applications for telephone installations, one company having 35. During the year the lines leading into Corsicana are to be rebuilt; new poles are to be added, corners guyed and the lines are to be put in first-class condition.

Since the Corsicana exchange was connected to the toll lines of the Brazos Valley Telephone & Telegraph Co., which is an Independent company having toll lines connecting with all the principal cities of the state, a long haul, long distance toll business has developed which requires the entire attention of one operator.

The rates in Navarro county are low at present for the service rendered. County subscribers can reach all of the 2,821 stations without paying toll. The Corsicana subscribers have free service to 1,871 stations in the county besides 700 stations in the city for their residence rate of $1.65 and business rate of $2.50. The increase in the number of subscribers of the Corsicana Telephone Co. during the past year was 143, which, it is stated, gives that company double the number of subscribers reached by its competitor, whose residence and business rates are $2 and $3 respectively.

On account of the new work to be undertaken by the companies during the coming year, it was decided to have meetings every four months and oftener, if necessary.

La Crosse Company Buys Interest in Interurban.

Announcement has recently been made of the purchase by the La Crosse Telephone Co., of La Crosse, Wis., of all the common stock and a nominal amount of the preferred stock in the La Crosse Interurban Telephone Co.

In the consummation of this deal, which has been under negotiation for some time, the former company acquires a substantial interest in a system of toll lines reaching from La Crosse to Sparta, La Crosse to Viroqua, and from La Crosse to De Soto. Other property in which the local Independent company acquires an interest includes the West Salem exchange and the Viola exchange.

The La Crosse company has purchased $10,500 worth of common stock and has also obtained a small block of the $18,000 worth of preferred stock outstanding. The company also assumed the obligations involved in a $30,000 second mortgage bond issue outstanding.

Immediately after the purchase of the stock, a $15,000 first mortgage bond issue was authorized to defray the expense of making extensions and improvements to the toll and rural lines in the territory covered by the Interurban company.

The La Crosse company's exchange, at La Crosse, will be the headquarters of the Interurban system. The Interurban company retains its identity as a separate corporation, subject to the control and regulations of the Wisconsin State Railroad Commission, although its business will be conducted in conjunction with that of the La Crosse company, to a large extent, for purposes of economy.

The new officers of the La Crosse Interurban Telephone Co. are: President, W. F. Goodrich; vice-president, W. H. Tarbox; secretary and treasurer, C. H. Schweizer; superintendent, J. M. Storkerson. Mr. Goodrich is secretary and treasurer and Mr. Storkerson superintendent of the La Crosse company.

Previous to the acquisition of its interest in the interurban company, the La Crosse Telephone Co. owned only one toll line, that from La Crosse to Galesville, although it has connections with a number of outside toll line companies.

It also became known recently that the company is making plans to do considerable underground work during the coming summer.

Operators' Schools in Michigan.

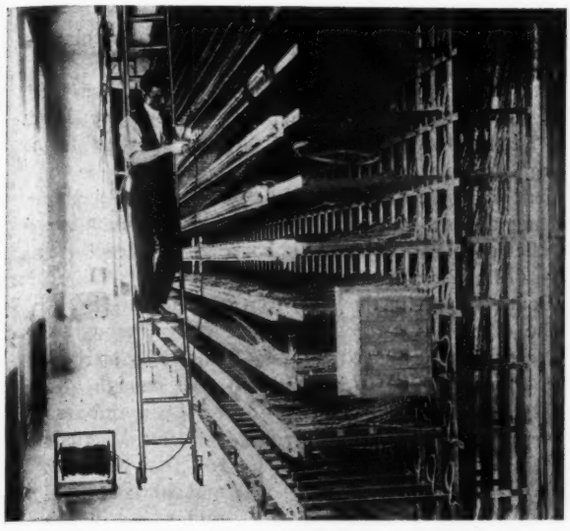
During the month of May the Michigan Independent Telephone & Traffic Association will hold schools of instruction for operators at various points in the state. This week schools were held at Grand Rapids, Owosso and Alma.

Dates and places for the other schools are: May 13 at Mt. Pleasant and Charlotte; May 15 at Ionia; May 16 at Hart; May 20 at Saginaw and Howard City; May 21 at Pigeon and Reed City; May 22 at Traverse City; May 27 at White Cloud; and May 28 at Coldwater.

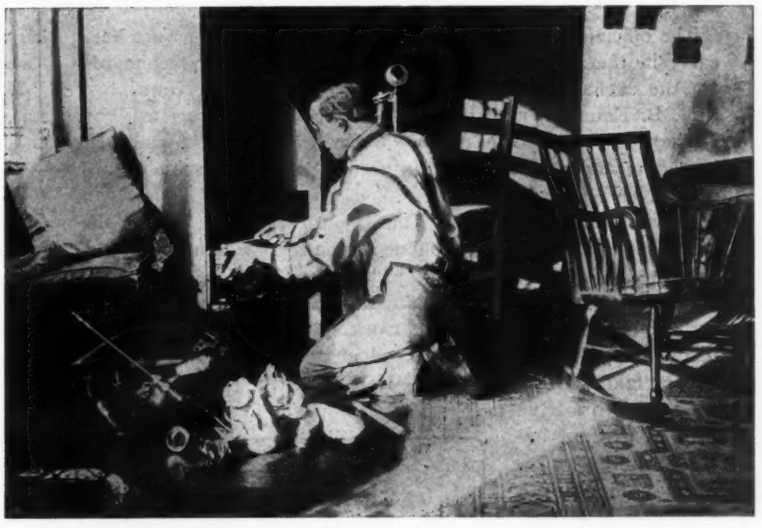
The schools held in the territory of the Citizens' Telephone Co. in and around Grand Rapids will be in charge of C. E. Smith, traffic manager of the Citizens' company. Those in other parts of the state will be conducted by W. S. Vivian, secretary of the Michigan association. In this way the entire state is expected to be covered during the month of May.

The new operating rules, which are those of the Telephony Service Association, will immediately be placed in effect throughout the Michigan territory.

"The Plant Man on the Job" Completes the Connection



No. 35. Cross-Connecting the Wire at Main Distributing Frame, the Connecting Link Between the Central Office and the Outside World.



No. 36. Placing the Instrument in the Subscriber's Home Requires Careful Work on the Part of the Installer to Avoid Damaging Furniture.

No. 37. Installer Getting O. K. Test from the Wire Chief.

No. 38. Wire Chief Testing and O. K.-ing the Circuit.

No. 39. The "Man on the Job" Preparing to Depart—The New Subscriber Tests the Service.

No. 40. As Doctor Johnson Once Said of a Pleasant Meeting, "Sir! We Had a Fine Talk."

In the Rural Line District

The officials of the Douglas County Telephone Co. were here early in the week and have promised two new switchboards for the exchange.—Homer Item, Champaign (Ill.) News.

H. B. Emmons, manager of the telephone company at Crab Orchard, was kicked by a horse while working in the stable at his home and was seriously injured.—Beatrice Dispatch, Lincoln (Neb.) Star.

Miss Stella Brainerd left Tuesday for Shickley, where she will have charge of a telephone exchange.—Hastings (Neb.) Tribune.

Peter Mogis, one of the employes of the local telephone company, fell from a pole while at work south of the city and was badly cut on the leg by an ax which he had in his belt. He will be laid up for some time.—Nebraska City (Neb.) News.

Coon Bros. have broken ground beside their telephone office for a new garage.—Rantoul Item, Champaign (Ill.) News.

Our telephone line is in operation once more. The old poles were all taken up on the table land and moved to a more convenient point four miles west. Also new wire of a No. 9 size was placed in lieu of the two No. 14 wires, making it a good line.—Clemen News, Alliance (Neb.) Times.

The Midland Telephone Co. are making some substantial improvements in their line from Carrollton to Bogard and putting new wire to Tina. — Colma Item, Carrollton (Mo.) Democrat.

The telephone men were working in these parts last week, putting on two new wires between Freeport and Warren.—Chelsea News item in the Warren (Ill.) Leader.

Our citizens were treated to a rare sight yesterday, after the sleet storm had coated everything with ice. The trees were beautiful, every twig bearing its load of glistening ice; telephone and telegraph poles carried fairy wires. This part of the scene, however, while picturesque, was bound to result in more or less expense to the wire companies, whose men were about early making necessary repairs. And here is where the rare sight came in. The walks and streets were one solid sheet of glare ice and the telephone company's troublemen, to a man, went about on skates, as did a good share of the population, young and old. While we stood at our sanctum window, down the street skated Jim Wheeler, armed with his belt of tools and other apparatus, with his climbers strapped in place. Rounding up at a pole carrying a broken wire, up he swarmed, with hardly a pause, skates and all. And after him, dashing merrily along, also on skates, came two or three more of the trouble gang, with coils of wire and repair kits. We have heard that somtimes linemen went on a "skate," but we never before saw a gang working with a pair of skates to each man.—West Maryville (Ill.) Courier.

This week the telephone company moved its office and switchboard from the Harry Everett building to their new building on West Grover street. The "hello girls" seem to be delighted with their new quarters.—Otterville Item, Booneville (Mo.) Republican.

Harry Page has been in town the last week with a gang of telephone workers, spending the nights in our midst; and yet for all that, have heard no one complain of losing anything.—Lisbon Item, Plano (Ill.) News.

The Decatur County Independent Telephone Co. has filed suit, asking for a mandatory injunction against Mary Reed et al. The Reed heirs will not allow linemen on their farm. —Greensburg Dispatch, Indianapolis (Ind.) News.

The farmers who own shares in the Lee Township Telephone Co. are putting up new poles and wires, which will be a great benefit to the people of this neighborhood.—Sixteen Item, Prairie City (Ill.) Enterprise.

Over in South Windham they stop runaway horses "by telephone." The other day two horses were going through the village at a terrific rate of speed and one farmer who attempted to stop the animals failed to grab them soon enough. One of the members of the family rushed to the telephone and in a few seconds was in communication with a man further up the road who was ready to meet the horses and stopped them as they came along. No damage was done to the team.— Lewistown (Mo.) Journal.

Mr. Frank Grehouse, of Cedar Rapids, Ia., arrived in the city Tuesday to assume the position of resident lineman of the Pitcher Telephone Co.—E. Dubuque (Ill.). Register.

The telephone switch at James Bouzek's has been out of commission for the past week, or else our "Hello Girl" down there has gone on an extended vacation.—Highmore (S. Dak.) Herald.

The Bader Telephone Co. have rebuilt the west end of their telephone line with new poles and wire. — East Mt. Zion Item, Astoria (Ill.) Argus.

The telephone service in this village would drive a saint to profanity. So far as telephone connections are concerned, De Soto is as completely cut off from the outside world as some insignificant nigger village in the heart of Africa. There is practically no communication with the county seats and adjoining hamlets. Something for the relief of such a situation ought to be done.—De Soto (Wis.) Argus

Practical Subjects—Letters and Discussions

The Inspector Had Read Telephony.

A few days ago we received a report from the subscriber at station 288x, located about six miles from the exchange, that they had a broken mouthpiece. The inspector drove out into the country, expecting to easily substitute a new mouthpiece for the broken part. When he arrived he found that besides the broken mouthpiece, there was also a broken receiver, caused by the subscriber dropping the instrument on the floor.

Replacing the broken parts, he started to call the exchange but found that the hook switch had been bent so that it rubbed against the frame. While trying to bend it back into shape, the hook switch snapped off about three-quarters of an inch from the pedestal. "What to do now?" was the question that bothered the inspector for a few minutes, as the remaining part of the hook arm was so short that the spring would hold the switch up. It was a long way back to the exchange. The inspector could not make the double trip and it meant the subscriber would be out of service over night. He then remembered what he had read in TELEPHONY a short **time** ago of how an inspector used a flat iron to clear a case of wet cord. So using his thinking apparatus he decided to borrow a flatiron.

Taking his file, he made a niche on the upper side of what remained of the hook switch. Then with a small piece of wire, made a loop around the handle of the flatiron and hung it on the hook switch. This kept it down all right. Although the subscriber had to put up with the inconvenience of lifting the flatiron off the hook every time he talked, they were able to use the telephone for a couple of days without it being out of service.

J. W. Hache.

Letters From a Retired Lineman to His Nephew.

Podunk Valley Farm.

Dear Ben:—I generally take up my literary pursuits nights and Sundays, but today is one of those days, when winter is taking a last look back, and spring is spitting at him as spitefully as a wild cat. Honest, I'd rather have it 20 below zero. I concluded I'd mend up the harness, so I took a load into the kitchen and went back to the barn for my tools. When I came back to the house, the harness was on the back porch. I went into the kitchen where Julia was waiting for me.

"Now sir, if you think you are going to clutter up this kitchen with your harness and traps, you are mistaken. I put in all day yesterday changing this part of the house and I'm not

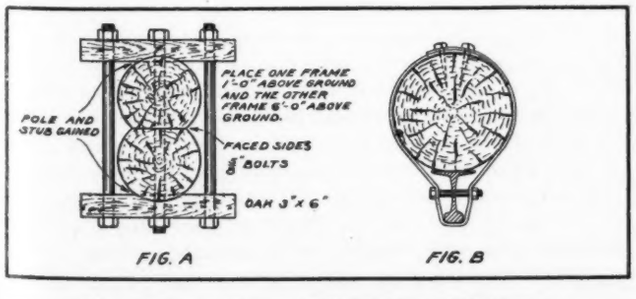

PLACE ONE FRAME 1'-0" ABOVE GROUND AND THE OTHER FRAME 6'-0" ABOVE GROUND.
POLE AND STUB GAINED
FACED SIDES
⅝" BOLTS
OAK 3"x 6"
FIG. A
FIG. B

Fig. 1. Some Types of Early Pole Reinforcing.

going to do it over again tomorrow. Another thing, I want to change things around in the front room, to see if there's room for a piano."

There's to be a piano drawing at Boswick's store—you get a number with every cash purchase. It's been going on for six weeks now and Julia has about 50 numbers. The drawing is next Saturday and so she must get ready to take care of the piano.

We moved things round about steen different ways, bookcase and all. We finally made room for a piano, but Julia isn't

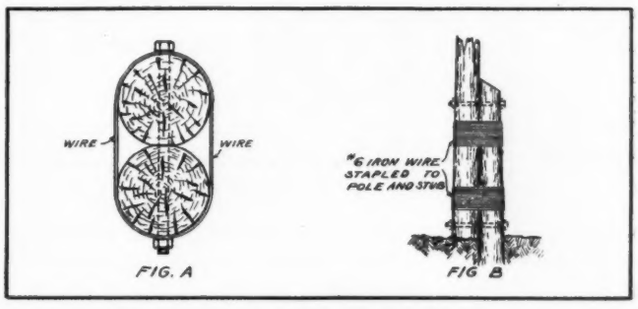


Fig. 2. Creosoted Butt Reinforcing.

sure it will look as well there as where the bookcase is. She almost wishes that she had waited until the piano comes. The rooms upstairs and also the cellar had to be overhauled, so it is now three o'clock. As the weather hasn't improved I may as well write letters.

I just had a call from town to go on a case of trouble but told them that I wouldn't take a horse out today, unless it was something very important. They said it was only one wire and perhaps it would come clear.

You mentioned pole reinforcements in your last letter. I

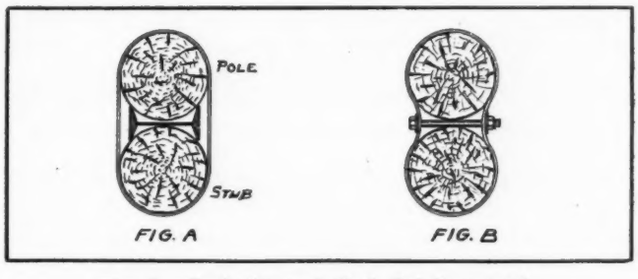


Fig. 3. Fastenings of Butt Reinforcement.

knew the egg before it was hatched. The first reinforced pole I ever saw was the most substantial job in that line I have ever seen. A farmer had been using a telephone pole for a gate post, and the pole had rotted off at the ground. He cut a chestnut log, about 13 inches in diameter, to a 12-foot length, and set it in place of the pole butt. It put the pole out of line a little, but not enough to hurt. I'll make a sketch of the way he bolted the poles together. (Fig. 1-*A*). The expense of such a plan would prohibit its adoption for general practice.

The next specimen I found was a pole on top of a hill, broken by the wind. It was reinforced by two fence rails, one on each side, lashed with No. 8 copper wire, the lashing extending from the ground line to the top of the rails. The rails were set about four feet in the ground. This arrangement had stood two years, and looked good for as many more.

The next was a blacksmith's job. The smithy had extended his shop out into the road, building his extension around one pole. Somehow, this pole was burned off at the ground. The smithy reinforced it with a piece of railroad iron and bonded the two in three places with tire iron (Fig. 1-*B*).

Then came the authorized creosoted butt fastened with a through bolt and lashings of No. 6 iron wire. The two sketches (Fig. 2) on this sheet will make the arrangement clear.

There was difficulty in getting the faces of pole and stub together, and, to overcome this, two I-beams, six or eight inches long, were set between them, as I show in the drawing (Fig. 3-*A*). This held them more rigid. Next the binding wire was tightened, not by pounding, but by a draw-bolt

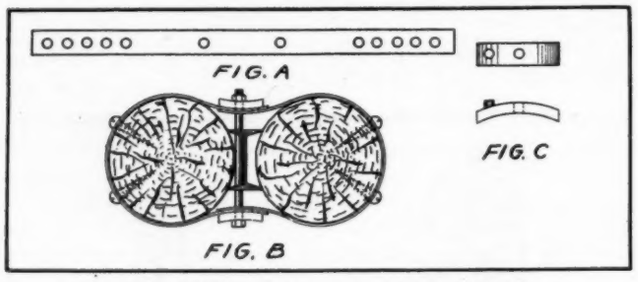


Fig. 4. Details of Strap Iron Butt Fastening.

with large washers (Fig. 3-*B*). After the wires were tightened, staples were driven in each winding. This made a pretty rigid job.

I'm not much of an inventive genius myself, but I've watched them make reinforcements by the last process and believe the same result could be accomplished in less time. My idea is to use straps in place of the iron wire.

A galvanized iron strap, 2 in. x ⅜ in. or 7/16 in., would give sufficient strength at perhaps a little greater cost. The straps could be left straight and bent to suit the size of the pole with several holes at each end (Fig. 4-*A*). Only one, or at the most, three lengths would be required. When in place, the straps would appear like this (Fig. 4-*B*).

These straps could be shaped around the poles with heavy hammers almost as well as the wire. After being drawn together in the center with a bolt, lags could be driven into the pole and stub through the holes made in the strap iron for that purpose. Two washers would be necessary on the draw-bolt, shaped something like I have shown in the last drawing (Fig. 4-*C*) These could be cast, as their use would be to bind the straps uniformly. The projection would fit into an unused hole in the strap.

Hello there's the fire bell. Will stop now, and see what's doing.

Back from the fire. It was a clean sweep of the east side. That is, it took the only building left on the east side of the track. Doc Stuver and I have talked of it considerably. It seems that, when the railroad came through here ten years ago the town started on both sides of the track. The east side never prospered. Pitt's general store was on that side and was about to fall when he moved building and all across the track. Since his move, the moving has continued. Building after building followed.

Most of Willett's townsite went back into cultivation. Now that this last building is gone, I guess the plow will be run along the right of way line.

I can't account for it, neither can Doc. He says he had his office over there a couple of years, but everybody kicked about it, so he finally moved back to the west side.

The joke is on Julia. The speckled hen didn't lay two eggs every other day. Our next neighbor had a speckled hen that got in the habit of coming over here to lay. That hen went into the pot last Sunday, and since then our speckled hen has ceased to be more than an ordinary fowl.

Chore-time now, then I must go up town and buy a round of shoes for the kids—a pair and a half of rights and the same of lefts.

UNCLE DICK.

Results of Investigation at Lincoln, Neb.

As a result of the investigation of telephone service at Lincoln, Neb., conducted under the direction of the State Railroad Commission as outlined in TELEPHONY of April 26, data as to the efficiency of the telephone service was admitted in evidence at further hearings before the commission on the application of the Lincoln Telephone & Telegraph Co. for permission to raise rates. The commission has now had this matter under investigation for four months. The collection of the data was in charge of Rate Clerk Powell, who was assisted by ten young men, most of them university law students. Each student was given a certain district in which to work and final results are reported on 6,389 calls sent out over the lines from every section of the city during a five-day test.

The assistants had been instructed how to call; how long to wait before making the second and third attempts when these were necessary; how to time "Trouble," after appealing to her for assistance, and how to record the service as it was said to be by the subscribers who were called and questioned. Each investigator kept a careful record of his work and the reports were summarized.

As a result of this investigation, the service of the company was declared to be 96 per cent. efficient on the assumption that the telephones were actually busy when the busy signal so indicated, and that the trouble operator reported correctly when she said that lines were in order but the party called was absent. The service study covered the company's main and south exchanges. Calls were made mostly from business telephones between the hours of 8:30 a. m. and 6 p. m.

Out of 6,389 calls the results in the accompanying table are shown:

	No. calls	Percentage to total
O. K. first call	4,156	65.
Busy first call	670	10.5
No answer first call, O. K. on second call	300	4.7
No answer two calls, O. K. third call	91	1.4
No answer three calls, O. K. fourth call	43	.6
No answer three calls "line O. K." no ans'r.	701	11.
No answer first call, busy second call	46	.6
No answer two calls, busy third call	26	.4
First call information; operator answered, said "No. discontinued"	106	1.6
Wrong first call	80	1.3
No answer first call, wrong number second call	33	.5
No answer two calls, wrong number third call	5	.1
No answer three calls, Trouble said line in trouble	93	1.5
No answer three calls, Trouble did not answer	30	.5
Number calling substation in trouble	9	.1
Total	6,389	100.

Counsel for some of the telephone users protested against the admission of the service data but the commission overruled the objection, declaring, however, that the young men who collected the data would be put on the stand. At a subsequent hearing a number of subscribers testified as to troubles experienced with the service.

This week an election was held in Lincoln for the purpose of choosing five commissioners out of 10 candidates nominated at the primaries. Of the ten candidates, five said to have been chosen through the efforts of the municipal ownership league, were pledged, among other things, to "the eventual bringing together of all public service corporations under the control and ownership of the city."

Telephone Train Dispatching in Adirondacks.

Expert telephone men and linemen are engaged in installing a telephone train dispatching service on the Adirondack branch of the New York Central & Hudson River

Railroad extending from Utica through the Adirondack wilderness, Northern New York, and Montreal.

Convention of Railway Telegraph Superintendents.

The program for the convention of the Association of Railway Telegraph Superintendents to be held at the Planters Hotel, St. Louis, Mo., May 20 to 23, will include the following papers:

"General Principles Underlying Telephone Transmission," by Elem Miller and C. A. Robinson.

"Use of Telephone by Railroads for Dispatching Trains, Handling Messages, etc," by J. C. Johnson.

"Inductive Disturbances as Affecting Telegraph and Telephone Circuits," by P. J. Howe.

"Protection Against Lightning and High-Tension Currents for Telegraph and Telephone Equipment," by M. H. Clapp.

"Main Line Power for Selective Circuits, Including Transmission and Signaling," by R. F. Spamer.

"Full Use of Wires," by H. D. Teed.

"Organization for Maintenance of Lines," by M. C. Allen.

"Organization for Wire Chiefs and Telephone Inspectors," J. B. Sheldon.

At the recent meeting in Chicago of the eastern and western divisions is was decided by the supply men not to make any organized collective exhibit of apparatus at this convention, leaving the individual concerns free to make displays in their rooms if they see fit.

P. W. Drew, 112 West Adams street, Chicago, secretary of the association, has called attention to the necessity of making prompt hotel reservations, since there is to be another convention in St. Louis during the same week.

The A. I. E. E. Annual Convention.

The plans for the annual convention of the American Institute of Electrical Engineers to be held at the Hotel Otsego, Cooperstown, N. Y., during the week of June 23, are nearly completed. President Mershon has appointed the following as members of the convention committee:

S. D. Sprong, chairman, E. L. Nichels, Comfort A. Adams, H. H. Norris, P. C. Bates, Farley Osgood, A. W. Barresford, A. M. Scheen, R. W. Flashman, W. O. Smith, W. A. Hall, Paul Spencer, H. A. Horner, J. F. Stevens, Peter Junkersfeld, C. W. Stone, J. W. Lieb, Jr., J. B. Taylor, P. M. Lincoln, J. B. Whitehead.

This committee, in conjunction with the meetings and papers committee, is preparing an attractive program. Manuscripts of a large number of technical papers are now in the hands of the latter committee, to be considered for presentation at the convention. The committee has accepted the following up to date, and the balance of the papers to be presented will be announced later:

"Standardization of Method for Determining and Comparing Power Cost of Steam Plant," by N. G. Stott and W. S. Gorsuch.

"The Electric Strength of Air," by J. B. Whitehead and T. T. Fitch.

"The Positive and the Negative Corona," by W. W. Strong.

"A Theory of Rupture," by F. W. Peck, Jr.

"An Oscillograph Study of Corona," by Edward Bennett.

"Test of an Artificial Aerial Telephone Line at a Frequency of 750 Cycles per Second," by A. E. Kennelly.

"The Behavior of Synchronous Motors During Starting," by F. D. Newbury.

"The Industrial Use of Synchronous Motors on Central Station Lines," by J. C. Parker.

"Automatic Substations," by M. H. Summerhayes.

A symposium of short papers include the following titles submitted by the educational committee:

"Introduction," by H. H. Norris.

"New National Association of Corporation Schools," by Wm. Henderschott.

"Legislation in Vocational Education," by W. I. Slichter.

"Results Obtained by the Pennsylvania R. R. in its New Apprentice School," by J. P. Jackson.

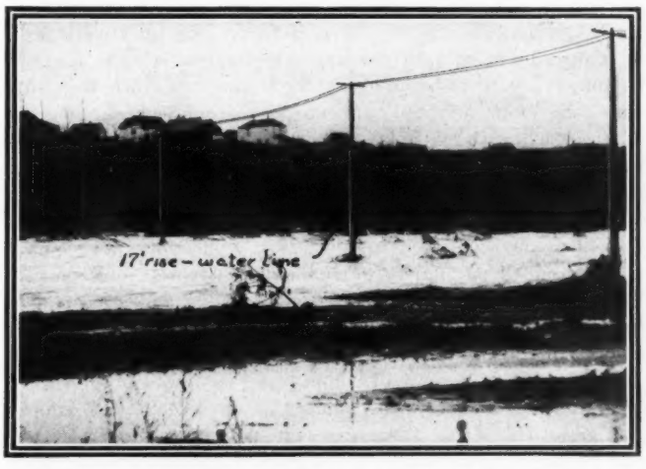
"A Special Feature of Vocational School Work," by A. J. Rowland.

"Vocational Training in the Far West," by Wm. Sibley.

Concrete Poles in the Flood.

I am sending you a photograph taken of the concrete pole line crossing the Whitewater river at Richmond, Indiana. These were the only poles that withstood the recent flood at Richmond, and they were not damaged or misplaced in the slightest.

This lead varies from 40 feet to 60 feet in length with



Concrete Telephone Poles Which Withstood High Water.

7-inch tops and 20-inch butts. All the other poles crossing this river were completely washed away. The pole lead has now been in service for over five years and shows absolutely no sign of depreciation.

Richmond, Ind. W. M. Bailey.

The New Eastern Pennsylvania Paper.

"Phone News," to be published monthly at Chambersburg, Pa., in the interest of the Eastern Pennsylvania Independent Telephone Association, made its debut with the May number. W. G. Underwood is editor. The publication will be devoted to the cause of the Independent telephone men against destruction of competition in the telephone field. The initial issue of "Phone News" contains a complete report of the organization of the Eastern Pennsylvania Independent Telephone Association and also numerous news items of interest to telephone men in that locality.

Motor Cycles for the Repair Department.

The United Home Telephone Co., which has exchanges in Muskegon, Ludington, Hart, Fremont, Shelby, Whitehall, Montague, Coopersville, Fruitport, Scottville and other Michigan towns has received six motor cycles and a new motor truck for use in its repair and construction work. The motor truck and two of the motor cycles will be used in Muskegon. An official of the company in that city is quoted as stating that with the new equipment the company will be able to give much more efficient service, as the repair crew will be able to cover the city much more rapidly.

The Telephone Inspector and the Troubleman

Continuation of a Series of Articles Begun in the September 7 Issue of Telephony—They Deal in an Elementary and Explicit Manner With Many of the Problems Encountered by Telephone Men in the Operation of Small Exchanges

By A. E. Dobbs

"No," answered George, "we have not, but when the new switchboard comes in, we are going to have it. The cross-connecting board in this office was in when I came. Besides, this office is growing too large for its original equipment and the new board will remedy that trouble."

"I wish you would tell me something about the different kinds of cross-connecting boards," requested Will, "and the various ways of connecting them."

"Well," said George, "I will tell you of the first cross-connecting board that I ever saw. It was located in the old Law Exchange in New York City and in those days we did not have any cables. Wires were run after much the same plan as used in telegraph offices. This exchange was originally used by a printing telegraph company. The wires, several hundred in number, were brought into the exchange in much the same way that loops are still cut into country telegraph offices—that is, each wire being kept separate in wooden cleats spaced about one inch apart; the cross connections being made under wood screws with washers, the same as done in some of our cable boxes, the kind we are discarding. All of the office wire, as well as the wire used for the cross connections, was simply of the braided paraffin type, commonly known as office wire." While talking George had been busy drawing and now handed the paper to Will, saying, "This sketch (Fig. 64) shows how it was done but only a few lines are shown connected across.

"In those days nearly all connections, as I said before, were made on hardwood strips under wood screws and copper washers. The wires from the switchboard to the cross-connecting board were made of common annunciator wire, while the cables from the outside were the ordinary rubber cable as we had no paired cable in those days. They terminated on connections of the wood screw and washer pattern. The terminals were set out from the wall a little, so that the jumper wires could pass behind them.

"Then we had no trolleys and very few day circuits for electric lighting. All lines were grounded. We never thought of fuses, and lightning arresters, when used at all, were all of the saw tooth pattern. The ordinary plates on top of all telephone instruments were relied upon to protect the instruments,

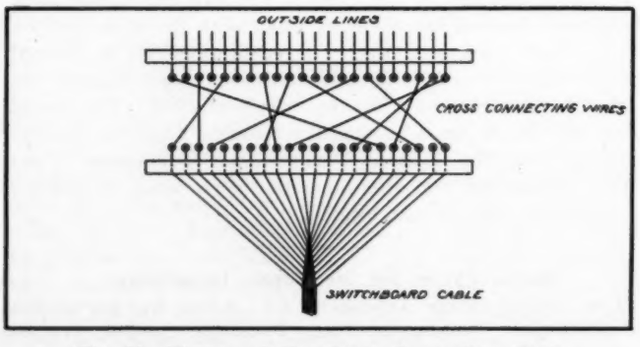


Fig. 64. Theory of the Cross Connecting Rack.

while lightning arresters were used upon the board only in the largest exchanges.

"I can easily remember the time when an exchange having 2,000 subscribers was considered a very large exchange indeed. As the telephone business grew, cables and terminals built on more substantial lines became necessary. Connections under wood screws and washers were always more or less unsatisfactory, and with the invention of lead covered cables it was necessary to have connections that could always be relied upon. Hence cross-connecting boards began to be studied and systematized. Cross-connecting boards of the type in that sketch (Fig. 64) were generally placed back of the switchboard, but

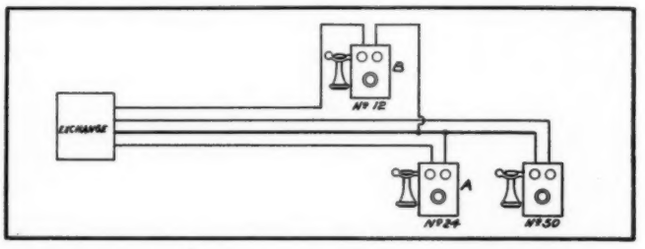


Fig 65. Layout of Common Return System Having Trouble.

with the new order of things, it was considered best to place them in a separate room where the men could get at them without going into the operating room. The cables were at first fastened to the wall of the building, while the cross-connections from the outside terminals to the switchboard terminals were made by means of rubber covered wire. More often annunciator wire run in a trough, either above or underneath the rows of terminals was used.

"It must not be forgotten that in a rack of this kind, the object to be attained is to have the wires lie loosely so they can be picked up and traced at any time desired. It goes without saying that a record should be kept of all cross-connections. In spite of the utmost care used, connections will occasionally be made which are not taken down. Records are sometimes marked down on slips of paper and lost; books become worn out and destroyed and in some cases even abstracted from the room. In these cases it is necessary for the wiremen to trace the connections from one terminal to the other and with the wire lying loosely in the rack, that is a comparatively easy matter.

"The racks as the exchanges grew, were improved and gradually became larger and larger until now the cross-connecting room frequently occupies the entire basement, or another room devoted to that purpose.

"With the rapid increase in the number of trolley and other power circuits, means for protecting the switchboard and instruments became necessary, so that cable terminals now not only carry binding posts, but also fuses, heat coils, test clips, and lightning arresters."

Some More Trouble.

"Mr. Wilson," said the manager, coming in at this moment, "I had a letter from a friend this morning, which has me guessing a little, and I would like to have your opinion upon it. Here is the letter."

George took the letter and looked over it. At the head of the letter was a diagram (Fig. 65). Then he read:

"'We have No. 12 copper for a common return. Distance from exchange to No. 50, four blocks. One-half block between No. 12 and 24 and also between No. 24 and 50. Connection at *A* is common return, but soldered. None between *A* and *B*, but several between *B* to exchange *not* soldered.

"'Have a number of telephones on line from No. 12 to ex-

change. All are working O. K., but quite often No. 24 will ring 50, and vice versa. *This does not always occur.* Has worked all right for quite a long time, but within the last month has been acting up. I can see how a poor connection at *A* on the return would come that way but I can not see where my trouble is. There is apparently no cross and little opportunity for one, as the lines 24 and 50, come down on arms separated by a toll line on the two pole pins. I have carefully examined the cable terminal and distributing board and find no ground. All other lines work O. K. What would you suggest as being the trouble?

"'Also, can you suggest any way to get rid of induction from electric light (alternating) on lines 38 and 14 laid out as in the attached sketch? (Fig. 66). The electric light wires parallel my circuits for about two blocks, on the opposite side of the alley and have considerable induction. It occurs less often on the telephone as we get near the exchange.'"

"Now, I see you know what the trouble is!" Mr. Risk exclaimed as he saw a twinkle in George's eye, "out with it!"

"What do I get out of it?" parried George. "You want me to tell you, so that you can write this man and pose as a great telephone expert. It seems to me that I have quite a lot of brainwork to do in this exchange without acting as expert for the whole country."

"Why," replied the manager, "as I don't get anything out of it, I don't expect you will either."

"Well," answered George, "Let us examine this letter in detail.

"He states that all the telephones from No. 12 back to the exchange, work all right but that the trouble occurs somewhere between No. 12 and No. 24. Now, it therefore follows that there must be considerable resistance in the return wire between Nos. 12 and 24 or else the current would not go around through No. 50, but according to his account there is only one joint in the wire between Nos. 12 and 24. If there should be a very small resistance between Nos. 24 and 50, that would cut no figure, or at least have no tendency to cross up these two. But if there should be a considerable resistance between Nos. 12 and 24, the current would have to divide itself very largely between Nos. 24 and 50, in order to get back to the exchange."

"Say," broke in Will, who had been listening attentively to the discussion, "he says that joint is soldered."

"I have seen soldered lines that showed up a great deal worse than those not soldered," continued George. "There are a great many men in this business who do not know how to solder connections. I have often seen men who had worked at the business a long time, and even so-called factory experts, who could not do a decent job of soldering. Right here in this town the telegraph company insists upon having every joint soldered, but I have seen some joints that would be a great deal better if the solder had never been brought near them. I might tell stories all day in this connection——"

"Well, that connection at *A* is the particular connection we are talking about now," broke in Mr. Risk. "What is the matter with that?"

"Solder," said George, not noticing the interruption, "to be effective must *unite* the metals with which it is brought in contact. A great many men who go out to solder a joint will hold the torch or the iron upon it until the solder melts around it. Then they let it go at that, leaving the acid to corrode the metals underneath. Do you catch the idea?"

"What do you think of the various soldering compounds?" asked Mr. Risk who began to see the reason for the trouble.

"Well," answered George, "I always preferred muriatic acid to anything else. In certain places this acid, where exposed to dampness, corrodes the wire. Upon linework where a torch was used, I nearly always insisted on having a can of water and a wet sponge to wash the joint as soon as it is made. There are certain soldering compounds, soldering sticks and soldering salts in which rosin and tallow form a large ingredient and they are not objectionable in this way. The soldering stick usually sold by the supply houses is especially useful in soldering copper wire. But if you don't apply heat enough, this compound flows into the seams and constitutes a

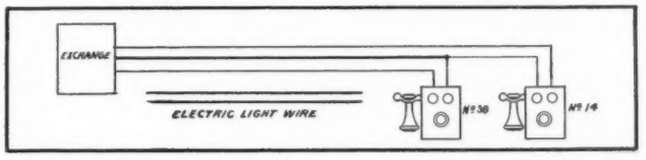


Fig. 66. Situation of Telephone and Electric Light Wires.

pretty good insulator. Thus enters a factor which may, in certain cases, even open your line.

"Yes, that is not unusual," as he saw a look of incredulity on the manager's face, "for I remember very distinctly of hunting up trouble of just that kind. I now favor sleeves for making joints."

"Say," spoke up Will, "is there not another section to that letter which asks something about electric light induction?"

"Yes," replied George, "but that is a hard question to answer without getting *all* the conditions. The two lines, as I understand it, run on opposite sides of the alley and parallel each other for only two blocks. He should not, with good construction, get enough induction from them to be more than barely perceptible. It may be that there is a leak on his common return, in some other part of the town. It may be possible that both the telephone circuit and the electric light circuit go through trees near enough to each other so that there is a slight escape from one to another. It is possible, too, that his common return wire is grounded, which would also tend to increase this effect, if there should be any leakage on the electric light circuit, which is very probable. But I could not answer this question off hand without seeing the plant."

(*To be continued.*)

New Mutual Company at Napoleon, Ohio.

At a meeting attended by 200 representatives and subscribers of 9 of the 11 mutual telephone companies in Henry county, Ohio, the co-operation and financial support of those present was pledged to the new Henry County Mutual Telephone Co., the organization of which has been in progress in Napoleon, Ohio, since the revocation by the city council of the franchise of the Napoleon Telephone Co. The new company promises equitable and mutual interchange of service in all parts of the county.

The mutual companies having representatives at the meeting were those at McClure, Liberty Center, West Hope, Malinta, Ololona, New Bavaria, Holgate, Gerald and Ridgeville, and a resolution was signed by these representatives. A large number of business and professional men at Napoleon also signed a petition favoring the new company. In order to expedite the installation of a telephone system the city council under a suspension of its rules recently granted a franchise to Charles W. Jackson and his assigns and it is stated that this franchise will be turned over to the mutual company as soon as it is legally organized. As recently stated, the Napoleon Telephone Co. is expected to take the entire matter into the courts.

Telephone Merger at Leavenworth, Kan.

Work of connecting the systems of the People's Home company of Leavenworth, Kan., and the Bell company at that place have been in progress for some time and is now nearing completion. The Home company acquired the Bell facilities several months ago and has been engaged in the work of perfecting an improved unified service.

From Factory and Salesroom

Convention: Association of Railway Telegraph Superintendents, St. Louis, Mo., May 20-30

Use of the Automatic Growing in Cuba.

That the automatic telephone is popular in the Island of Cuba is clear from the fact that during the past two and one-half years, the number of subscribers has increased 300 per cent. In 1910, just before the Cuban Telephone Co. installed automatic apparatus, there were some 4,100 telephones in use throughout the island, while in February, 1913, the names of 12,229 subscribers appeared on its books.

Besides this orders have been placed with the Automatic Electric Co. of Chicago for equipment for 5,000 additional lines, the latest order being for an initial installation of 2,000 lines for the exchange to be established in Santiago. The equipment is to consist of 20 line switchboards equipped with 100 line switches each, total 2,000 line switches. There will also be installed secondary line switches, first selectors, second selectors and connectors, mkaing a complete exchange of a 10,000 system. The power equipment, desks, etc., provide for an ultimate installation of 5,000 lines.

A three-position wire chief's desk is to be installed, two positions being equipped for testing local lines and the third position for long distance and rural lines. This desk will be thoroughly equipped with all necessary apparatus for making complete tests of every nature.

A two-position toll and rural board is to be installed, equipped at present with 10 toll lines, 20 rural lines and 50 pay station lines. The calculagraph is to be mounted upon the operator's position. A two-position information desk is also to be installed, equipped with the necessary information trunks, dead trunks, etc., to give the subscribers the best service.

All of the apparatus is to be shipped from the Automatic factory by September 1, 1913, and will be installed under the supervision of the United Construction & Supply Co., which has had charge of the construction work of the plants of the Cuban Telephone Co.

The Coffey System of Accounts.

In connection with the announcement that the Indiana Public Utility Commission has voted to adopt the Wisconsin system of accounts for all public service corporations having an annual gross income of $50,000 or less while the Interstate Commerce Commission's schedule will govern in the case of companies having an annual gross income above $50,000, the Coffey System & Audit Co., of Indianapolis, calls attention to the fact that the "Coffey System" embodies the accounts of both. The company maintains a free correspondence department to assist its patrons in keeping their accounts correctly.

Handmike at the Mardi Gras.

"Way down south in the land of cotton," in fact just about as far south as you can go and keep your feet dry, is a place that is as famous in song and story as Ericsson is in telephone. It has been well known in the past and, with the completion of Uncle Sam's little ditch, it will be heard of more and more. We might as well stop and say right here that we mean little old New Orleans, La.

Now when you speak of New Orleans you naturally think of Mardi Gras. Don't pronounce this the way it looks either. Pronounce it like the last syllable in the name of that great little baseball leader, Johnny McGraw. Don't pronounce it "grass" because there is no grass growing around those other New Orleans notables, Woodward, Wight & Co., Ltd.

Who are they? Why they are the guys who put the "New" in New Orleans. How? By taking the agency for that well known line of telephones, Ericsson. And Woodward, Wight & Co. are as well known down south as the Mardi Gras is up north. Of course, Ericsson telephones and switchboards are not new to that territory, but it is a new thing to be able to find them right in stock all the time in New Orleans. Therefore rejoice, Louisiana and Mississippi telephone fellows. It's a stroke of rare good luck for you. Grab the opportunity while it's hot off the bat.

The Telephone Operator's Chair.

The chair shown in the accompanying illustration is designed to provide the maximum comfort for the telephone operator. This is the Davis chair with McCloud adjustable back rest, manufactured by the Davis Chair Co., Marysville, Ohio, which on January 1, 1913, became a new organization with C. H. Smith as president and J. J. McCloud as secretary and treasurer. The chairs made by this company have long been recognized as of the best quality and workmanship and the work of the new organization will be mainly that of handling the growing business of the company in a manner satisfactory to the customers.

The Davis chair is of kiln dried oak and, as shown here-

Davis Chair With Adjustable Back Rest—Pony Trademark.

with, has a new back iron which adds strength and durability to the upright. The chair can be readily set in any one of three positions—forward, center and back—by pressing the thumb latch at the right of the upright and this feature, by providing for the comfort of the operator, insures better service for patrons. The pony trademark shown in the illustration appears upon the up-

right and constitutes the assurance that the purchaser is getting a "sure enough" Davis chair with McCloud adjustable back rest.

Difficult Problems in the Anchoring of Poles.

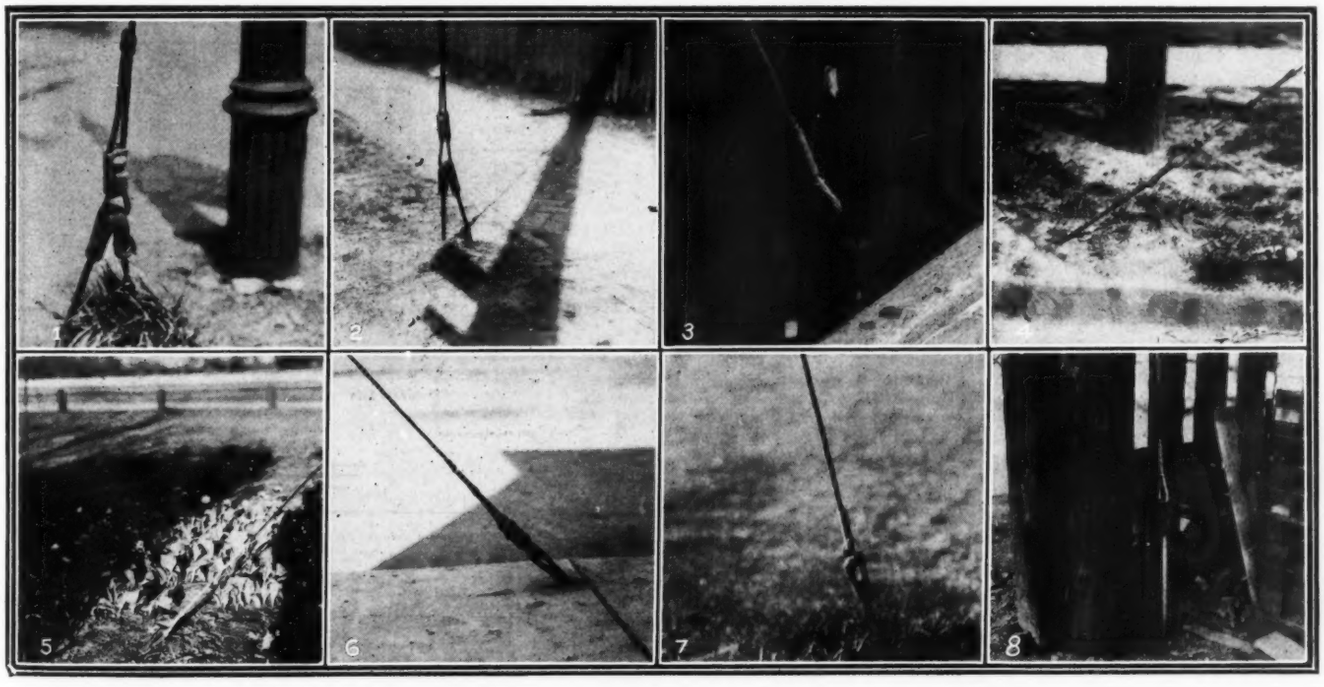
Various problems arise in the anchoring of poles by reason of the frequent necessity of locating the poles in close proximity to lawns, gardens, fences, sidewalks, curbings, buildings, and in other surroundings where correct anchorage becomes at once a puzzle. The accompanying illustrations show a number of instances in which an anchoring difficulty was solved, the type used being the Matthews guy anchor, manufactured by W. N. Matthews & Brother, of St. Louis, Mo.

In view No. 1 is shown the method of holding an extra strain at a point where it would have been exceedingly costly to have put down a dead man on account of the close proximity of a brick sidewalk and the gas lamp shade at the right of the picture. Two of the anchors were used to support this pole, the shadow of which may be seen on the sidewalk. The second view presents a condition similar to that in No. 1. Two anchors of 5-in. size were used and screwed down under the sidewalk as shown.

A close inspection of No. 3 shows a 66-in. Matthews guy anchor screwed down in an 8-in. space between a fence and an inclined driveway. This is a situation where the digging of a hole would have been out of the question and the type of anchor used saved its cost in this installation over any anchorage which would have required digging. An anchor which was screwed down between a shade tree and the curbstone until it took a firm hold on the roots of the tree is shown in the fourth view, and is another example of a pole anchored securely in an extremely awkward place.

Many of the difficulties in pole anchorage are rather in the way of securing the consent of property owners than by reason of difficulties due to surrounding objects. A case of this kind might easily have arisen in connection with the installation shown in the fifth scene, where it was necessary to secure anchorage in a flower bed. Permission to dig a hole could not have been obtained, but the consent of the owner of the flower bed was readily secured for the type of anchor used. An instance in which a 6-in. Matthews guy anchor saved a considerable amount of money is presented in No. 6. A section of the sidewalk about 8 ins. in diameter was chiseled out and the anchor inserted and screwed down to its full depth. A small amount of granitoid was used to finish the job, as shown. Another similar case is shown in Fig. 7 where permission was secured to put an anchor in a lawn and this was done without damage to the sod.

In the last view of the group is shown a guy carried over a fence into a lumber yard, where it is attached to a 6-in. Matthews guy anchor that could not be installed to its full depth because of the surrounding obstructions. This anchor went through the winter just passed, in which there were three very heavy sleet loads on the pole. It is found that this anchor is holding and has not given a fraction of an inch. All these installations were made in Decatur, Ill., where over 2,500 anchors of this type are in use by the Central Union Telephone Co., the Home Telephone Co., the Illinois Traction System and the electric light department of the city.

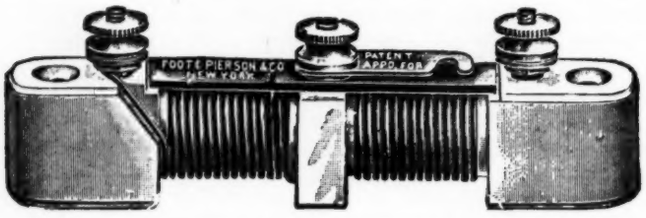


Views Showing Some Typical Installations of the Matthews' Guy Anchors.

The Argus Lightning Arrester.

The Argus lightning arrester, designed for the protection of telegraph apparatus, consists of a coil of bare copper wire wound in a spiral groove on a porcelain shank, as shown in the accompanying illustration. Adjacent to the coil and placed lengthwise of the arrester is a metal strip connected to ground. The plate is adjusted at a slight angle so that the distance from the convolution of the coil nearest the line is about ⅛ in. while further along the coil the distance is about 1/32 in. This causes the arc of lightning discharge to be broken up into a dozen or more little discharges, no one of which is of sufficient intensity to raise a burr on the ground plate. This construction provides an arrangement by which it is claimed the lightning is arrested and the telegraphic apparatus thus adequately protected while at the same time the circuits are maintained in perfect working order during the continuance of a thunder storm.

The protection of a cable and of the apparatus inside the telegraph or telephone office is best effected with the arrester placed at the point where the wire leaves the pole line to enter an underground, submarine or office cable. Since it would be impracticable, however, to connect each line



Argus Lightning Arrester.

wire to its arrester, the arresters can be placed in a box on the pole or in a cable house to which the several lines are gathered by a cable. Cables in general use for such purposes carry a current of about 15 amperes without injury; but cases are likely to occur in which heavy gusts of wind during a thunderstorm blow the wires into contact with electric light or power circuits. If, in such a case, the lightning by jumping to the ground plate in the arrester, should establish an arc for the power circuit the latter might develop sufficient current to melt the cable leading from the line wires to the arresters. Protection against possible dangers of this kind is afforded by the use of a fuse wire at one end of the Argus lightning arrester which can carry from five to seven amperes. The arrester having this fuse wire is designated as type B Argus lightning arrester. This fuse is not designed to be blown by the lightning itself and is therefore made as heavy as is consistent with the carrying capacity of the leading cables. The Argus lightning arrester is manufactured by Foote, Pierson & Co., manufacturers of telegraph instruments and supplies, 160-162 Duane street, New York city.

An Improved Kerosene Fire Pot.

The accompanying illustration shows an improved kerosene firepot designed to produce the required heat and to give satisfactory service either indoors, or outdoors under severe conditions of weather. The burner is surrounded by a shield which protects the flame from strong winds. All of the parts are of the best material and strongly made to withstand hard usage. The tank is of heavy gauge galvanized steel and is thoroughly braced. It is fitted with the manufacturers' patented brass pump, which is made with a double spring automatic check valve, with which sufficient air pressure can be secured at all times.

Kerosene Fire Pot.

The burner is constructed to superheat the gas before it is burned, and the generating chamber is provided with a removable tube and wire gauze strainer which can be easily cleaned if it becomes clogged from using impure fuel. A knife shaped cleaner is also supplied for use in cleaning the orifice or fuel opening in the burner. The needle valve is fitted with a stuffing box and is always tight.

This fire pot is manufactured by the Clayton & Lambert Manufacturing Co., of Detroit, Mich., which has applied for patents covering the improvements embodied in the device. It is said that the cost of this device is soon saved in the saving of fuel alone, as kerosene is much cheaper than gasoline and the amount of fuel consumed is small. For the benefit of those interested the company has issued a new booklet in which this No. 25 fire pot and the other styles of torches and fire pots made by this company are described.

Lightning Arrester—The Wirt Plan of Installation.

A good idea of the Wirt plan of lightning arrester installation may be had by reference to the accompanying diagram. In the arrester which is used in connection with the plan, will be found principally a heavy galvanized steel ground plate, with a little over nine square inches of firing surface, and two line plates of the same material, each containing about one-half the surface of the ground plate, and separated from the ground plate by 1-16 of an inch air gap. The width of the air gap is materially reduced to about 1-32 of an inch by dents in the line plates, which serve to center the point of firing. This arrangement, it is said, has proven itself to be very effective in grounding heavy discharges.

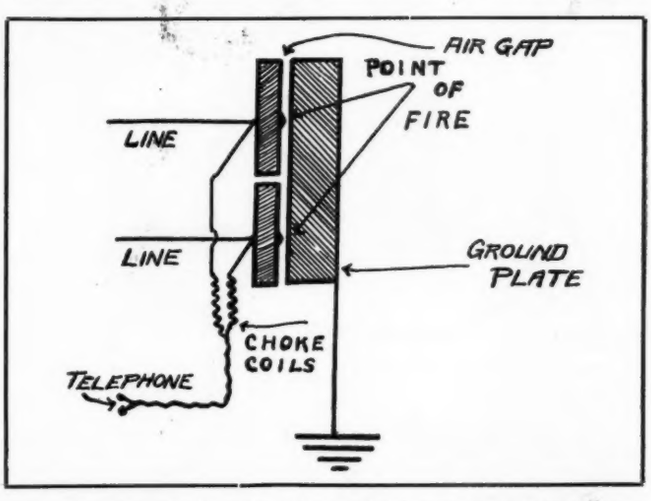


Diagram of Wirt Arrester and Plan of Installation.

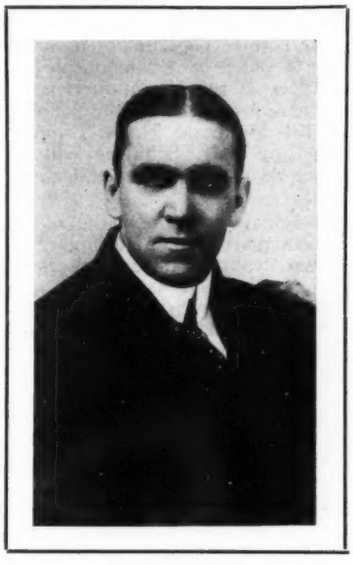
In addition to this protection, or re-inforcement, impedance or choke coils are formed in the duplex, the purpose of these coils being to offer impedance to current set up by the oscillation caused by the arcing of heavy discharges. In connection with this it must be remembered that a discharge passing through an air gap arrester, has a rebounding effect, that is, a part of the discharge bounds back to the line plates, thence back to the ground plate, alternating thus until the last weak wave settles to ground. It is here, therefore, that the impedance coils are used to advantage.

Experience has proven that to be the most effective, the impedance coils, which are usually formed in the duplex, must be placed as near the line plates as possible. A mistake often made by installers who do not know the value of such coils when put in the right place, is to form the impedance coils in the end of the duplex connecting to the telephone. Some installers have a habit of doing this for the sake of the appearance of it. An instance may be cited of a narrow escape of a rural home, which was served by a grounded party line. In this case lightning struck the wire and was carried into the house. The insulated wires on the house were single conductor and ran parallel about two inches apart, passing through the wall in separate holes. Coils about six inches long, formed over a lead pencil, were connected to the carbon arrester on the telephone.

Examination showed that the discharge cut both wires on reaching the coils, and started a fire at this point, from the flammable material in the insulation. This was fed by papers laying on top of the telephone, but prompt attention by members of the family prevented further loss. The telephone was uninjured, which proves the efficiency of the coils, although put in the wrong place.

Cracraft, Leich Electric Co. Increases Sales Force.

The Cracraft, Leich Electric Company, of Genoa, Ill., has again increased its sales force by the addition of H. W. Hogue who will represent the company in Indiana and Southern Michigan. Mr. Hogue's telephone experience



H. W. Hogue.

has been extensive. He entered the field in October, 1900, as installer for the Stromberg-Carlson Telephone Mfg. Co., with which company he remained until April, 1912, acting for a number of years as foreman in charge of the installation of some of the largest independent telephone exchanges in the country. During this time he installed in Rochester, N. Y., the only full automatic call distributing system. From April, 1912, until February, 1913, he was with the Western Electric Company as assistant foreman of installation of the New York Telephone company's new 37th street office in New York City.

Mr. Hogue is familiar with the best Independent Automatic and Bell practice and will be in a position to discuss intelligently all matters of equipment with his customers. He has a pleasing personality and will prove a valuable acquisition to the Cracraft, Leich Electric Company's sales force.

The Roylance Electrical Slide Rule.

Keuffel & Esser Co., New York, has put on the market a modification of its regular Mannheim slide rule No. 4035, known as the Roylance electrical slide rule No. 4133. This rule has, in addition to the Mannheim features, a series of scales or gauge marks by means of which the different properties of copper wire, such as size, conductivity, weight, etc., may be determined without the use of tables.

With one setting of the slide and runner it is possible to read directly for any standard copper wire the diameter in mils, area in circular mils, area in square mils, weight in pounds per 1,000 ft. of bare wire, the resistance in ohms per 1,000 ft. at 10 deg. or 50 deg. F., and the resistance in ohms per 1,000 ft. at 20 deg. C., or 68 deg. F.

The gauge marks graduated on the square edge of the rule, cover all standard Brown & Sharpe wire gauges between No. 0000 and No. 40 and are brought into alignment with the graduations on the face of the rule by means of the runner which is provided with a gauge index.

Scales showing the carrying capacity of different kinds and sizes are placed in the groove in the body of the rule beneath the slide. The upper row of figures shows the ampere carrying capacity of rubber-covered wire; the second row, weather-proof wire; third row, rubber-covered cable; and fourth row, weather-proof cable. These scales are also read in connection with the gauge marks by means of the runner. The new rule has an improved runner and a special gauge mark for the conversion of horsepower and kilowatts.

Three hair lines are engraved on the runner, the center being intended for all calculations except for areas of circles, the other lines being used for determining the area of circles of given diameter or the diameter of circles of given area.

The Roylance electrical slide rule is eight inches long, is engine divided on white facings and has a glass indicator.

Paragraphs.

McRoy Clay Works, Chicago, introduce a new feature in their May blotter calendar. "A test of strength" of McRoy multiple duct is pictured. A section of four-duct conduit resting on supports placed under the ends is shown supporting 93 pieces of pig iron. To one who has tried lifting "pigs," the illustration is convincing testimony of strength. The quotation this month says: "The foxiest people we know among the successful ones, are those who use their rivals for pace-makers."

The Oshkosh Mfg. Co., Oshkosh, Wis., reports a big business in rock elm insulator pins. Recently three carloads have been sold for shipment to Canadian points and two carloads in the United States. This is in addition to a large amount which has been ordered for less than carload shipment.

The Rome Wire Co., of Rome, N. Y., has just issued its May calendar the illustration on which is entitled "The Finest on the Floor." Those who are on the company's mailing list to receive this handsome piece of art are very fortunate indeed.

General Bakelite Co., New York, has just issued a booklet describing Bakelite moulded insulation and its various properties. In telephone work Bakelite is used for receiver shells and caps, jack panels and in many places where insulation between parts is desired.

"The Rejuvenation of the Craneville Telephone Exchange," the new serial story that is scheduled to follow the last installment of "The Telephone Inspector and the Troubleman," now running, will, in the opinion of capable critics, be read with far more interest than anything of the kind we have ever published.

It is full of action and fuller of information; and, aside from the real merriment it affords, every enterprising telephone man will find much good in it for himself and his company.

Oppose Advance of Rates in Missouri Cities.

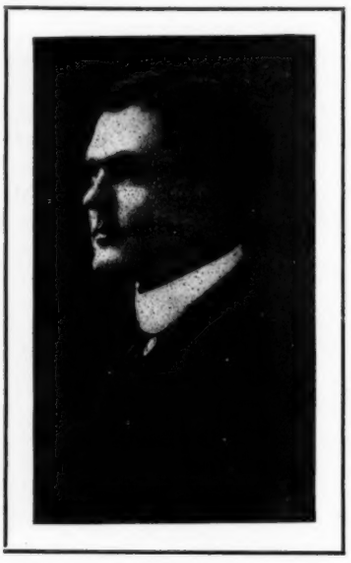
An order has been made by the utilities commission of Missouri giving the Home Telephone Co., of Kansas City, and the Missouri & Kansas Telephone Co. ten days in which to show cause why the old rates of the former company should not be restored at Independence and the old rates of the latter company should not be restored at Mount Washington, near Kansas City. It is stated that rates were recently raised at these places 100 per cent.

Condensed News Reports

Officers of Companies are Earnestly Requested to Forward Us Promptly All Financial and Other Statements as Soon as Issued, and Any Items of Interest as to Their Plants and Systems

Personals.

F. T. CALDWELL, superintendent of the Home Telephone & Telegraph Co., at Spokane, Wash., has been appointed superintendent of telephones at Edmonton, Alta., Can., where he will make his home. Mr. Caldwell was presented, prior to his leaving the company, with a solid gold watch and fob by his associates in the offices of the company. About three



F. T. Caldwell.

years ago Mr. Caldwell was sent to Spokane by the Automatic Electric Co., of Chicago, to take charge of the installation of the Home plant. With the completion of this work he was offered and accepted charge of the exchange. He will still retain an advisory connection with the Home company and will visit Spokane about once a month for the purpose of making inspections. F. W. Buff, vice-president of the Inter-State Consolidated Telephone Co., entertained Mr. Caldwell at a luncheon shortly before his departure. Those present were: Thaddeus S. Lane, F. W. Buff, L. B. Cornell, J. W. Fisher, F. T. Caldwell, B. E. Cooney, W. J. Currie, R. T. Wortman, E. B. Thauburn, C. K. Lee, W. F. Hofsteater, E. J. Denny, Ray Plank, S. B. Skillings, E. L. Burbidge, G. R. Riddle, M. B. Haish.

Mr. Caldwell's many friends in the telephone field know that he will acquit himself creditably in his new position.

C. W. BARTLETT has resigned his position as manager of the Fairbury, Neb., exchange of the Lincoln Telephone & Telegraph Co.

GEORGE DICKINSON has been appointed manager of the Minnewaukan, N. D., exchange of the Central Union Telephone Co., succeeding E. J. Schmid, resigned.

W. S. DUPIN has been appointed manager of the Lincoln Telephone & Telegraph Company's exchange at Seward, Neb., to fill the vacancy caused by R. E. Murphy's resignation.

THOMAS W. WILKINSON has resigned his position as superintendent of the Wareham Telephone Co., at Manhattan, Kans., to accept a position as salesman for the Dean Electric Co., with headquarters at Waco, Texas.

F. H. LEONARD, a former resident of that city and for the past two years local manager of the Malone, N. Y., office of the New York Telephone Co., has been appointed to take charge as local manager at Plattsburgh, N. Y., succeeding W. H. Schuyler.

R. M. BUEHLER, formerly local district manager for the Mountain States Telephone & Telegraph Co., at Phoenix, Ariz,. has been transferred to Prescott, where he will fill the position of district manager. W. Cockrell will succeed Mr. Buehler at Phoenix.

C. H. KLAUDER, formerly district manager of the Consolidated Telephone Co., of Easton, Pa., has been appointed general superintendent and manager of the Blue Mountain Telephone & Telegraph Co., with offices at Bangor, Pa. W. C. Miller, of Scranton, will take Mr. Klander's place at Easton.

B. G. WOODLEY, formerly contract manager for the Union Telephone Co., at McKinney, Texas, has been promoted to the position of local manager of the company, succeeding W. K. McQuown, who was recently made general manager of the company and who also holds the position of superintendent of the North Texas Telephone Co.

W. H. SCHUYLER, former superintendent of the New York Telephone Company's office at Plattsburgh, N. Y., and later acting as local manager of the Mountain Home Telephone Co. in that city, has been promoted to the office of commercial superintendent of the Mountain Home company, with headquarters at Plattsburgh. Mr. Schuyler will have charge of all matters pertaining to contracts and collections in the entire territory.

CARL W. LEWIS, manager of the Dakota & Montana Telephone Co., with headquarters at Hettinger, N. D., has recently been appointed deputy state auditor for North Dakota. He will take up his new duties as soon as a man is secured to take his place as manager of the Dakota & Montana Co. Mr. Lewis is a capable, wide-awake, progressive young business man who has worked himself up from the position of bookkeeper to that of manager of the above mentioned company. He has a wide circle of friends in that section of the state, and elsewhere, who will be much pleased to learn of his appointment to the state auditor's staff.

Obituary.

JOHN H. DUNN, who has been connected with the Mineral Point Telephone Co., at Mineral Point, Wis., for the past five years, accidentallv came in contact with a live wire of high voltage and was instantly killed.

New Companies.

ASHKUM, ILL.—The Swamp Central Telephone Co. has been incorporated with $2,320 capital stock. The incorporators are: N. J. Wilson, A. H. Chandler and C. A. Giseburt.

COLCHESTER, ILL.—The Colchester Telephone Co. has been incorporated with $6,000 capital stock. The incorporators are: J. M. Clayton, Frank Stump and L. A. Null.

GRAYSLAKE, ILL.—The Avon Telephone Co. has been organized with a capital stock of $2,500. The incorporators are: M. Kapple, John F. Moose and Arthur Leng.

OSCO, ILL.—Articles of incorporation have been filed by the Osco Mutual Telephone Co. with $2,000 capital stock. The incorporators are: A. L. Westerlund, R. G. Neville and C. H. Anderson.

VERMONT, ILL.—The Vermont Telephone & Exchange Co. has been incorporated with $1,000 capital stock. The incorporators are: Oscar H. Russell, W. L. Derry and W. F. Bader.

CHANUTE, KANS.—Articles of incorporation have been filed by the Big Creek Rural Telephone Co., with $5,000 capital stock. The incorporators are: Wm. Reinhardt, D. W. Gilmore, H. C. Burghart, Wm. Burghart and J. D. Cowen, all of Chanute.

WALKER, KANS.—The Walker Telephone Co. has been organized with $270 capital stock. The incorporators are: Wm. Robben, Henry Robben, John Robben, Frank Schulte, of Walker, and George Schulte, of Victoria.

DYKEMAN, MINN.—The Modern Rural Telephone Co. has been organized by the following: Elmer Persson, A. C. Love, E. Phillips, E. Roderick, E. H. Davis and Ernest Persson.

LEWISTON, MINN.—Articles of incorporation have been filed by the Fremont Telephone Co. with $500 capital stock. The officers are as follows: President, Jas. English; vice-president, Chas. Needner; secretary and treasurer, Hans Selvig.

UNDERWOOD, MINN.—Articles of incorporation have been filed by the Underwood Rural Telephone Co. with $6,500 capital stock. The incorporators are Arthur P. Falk and B. J. Dunne, of Underwood, and O. S. Wyman and John Urke, of Vesta.